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THE EFFECTS OF TRADE AND EXCHANGE RATE POLICIES ON AGRICULTURE IN NIGERIA

T. Ademola Oyejide

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CONTENTS

Foreword

1. Summary 9

2. Introduction 11

3. Structure and Growth of Nigerian Agriculture 13

4. Survey of Economic Policies 23

5. Agricultural Price Interventions and and Incentives 28

6. Agriculture and the Dutch Disease 33

7. Effects of Trade and Exchange Rate Policies 42

8. Conclusions 51

Appendix: Supplementary Tables 54

Bibliography 59

TABLES

1. Minimum and rural wage rates, 1970-82 17
2. Relative domestic food-crop prices, 1982 20
3. Relative prices of agricultural output, 1950-57 20
4. Relative prices of agricultural crops, 1960-69 and 1970-82 21
5. Ratios of domestic prices to international prices for selected agricultural crops, 1979-82 29
6. Nominal rates of protection for selected agricultural crops, 1979-82 30
7. Effective rates of protection, selected agricultural crops, selected years, 1960-82 31
8. Changes in sectoral contributions to output, employment, and exports, 1970 and 1982 37
9. Effects of sectoral shifts on output, 1970-82 38
10. Effects of sectoral shifts on exports, 1970-82 39
11. Effects of sectoral shifts on employment, 1970-82 39
12. Components of sectoral shifts in output of the Nigerian economy, 1970-82 40
13. Components of sectoral shifts of employment in the Nigerian economy, 1970-82 40
14. Real prices of exports and terms of trade, 1970-82 40
15. Exchange and rural wage rates, 1970-82 41
16. Regression results for total exports 47
17. Regression results for agricultural exports 48
18. Regression results for oil exports 48
19. Regression results for cocoa exports 49
20. Regression results for groundnut exports 49
21. Regression results for palm kernel exports 50
22. Range of values for omega estimates 50
23. Explicit, implicit, and total taxes on cocoa, groundnuts, and palm kernel exports, 1979-82 50
24. Producer prices of major agricultural crops, 1963-82 54
25. Output indexes of major agricultural crops, 1965-80 54
26. Indexes of domestic prices of major food crops, 1965-80 55
27. Price indexes for selected export crops, 1960-82 55
28. Index of agricultural production, 1975-82 56
29. Guaranteed minimum prices for food crops, 1976-82 56
30. Domestic price indexes, 1960-82 57
31. Supplementary regression results for aggregate exports 58

ILLUSTRATIONS

1. Nominal wage rates and consumer price indexes, 1970-82 17
2. Indexes of real minimum and real rural wage rates, and consumer price index, 1970-82 18
3. Food and export crop prices, 1970-82 22
4. Spending effect of a resource boom 35

FOREWORD

The past decade has been one of major turbulence in the global economy, including rapid inflation, oil price shocks, extraordinary rise and decline in food prices, and low real interest rates encouraging borrowing that has later proven unsustainable. The process of managing that turbulence, along with industry-oriented development strategies, has led many developing countries to grossly overvalue their exchange rates. The extent to which overvaluation discriminates against exports and agriculture in general and agricultural exports in particular has received increasing emphasis in recent years.

Thus, the International Food Trade and Food Security Program at IFPRI has undertaken a series of country studies on the foreign trade and exchange rate regimes as they relate to the structure of incentives for agriculture in developing countries.

IFPRI's comparative studies on this topic have included *The Effects of Exchange Rates and Commercial Policy on Agricultural Incentives in Colombia: 1953-1978,* Research Report 24, by Jorge García García, "Coffee Boom, Government Expenditure, and Relative Prices in Agriculture: The Colombian Experience," also by Jorge García, with Gabriel Montes, and *Agriculture and Economic Growth in an Open Economy: The Case of Argentina,* Research Report 36, by Domingo Cavallo and Yair Mundlak. Research under way includes parallel studies on Zaire, the Philippines, Chile, Peru, and Thailand.

This research report, a part of that larger, integrated effort, focuses on Nigeria, a major oil exporter. The development of a booming export sector, such as oil in the 1970s, is likely to have strong repercussions on the competitiveness and growth of other tradable sectors in the economy, agriculture being particularly affected because it is more trade-oriented than other sectors. Thus Nigeria presents an opportunity to learn from an important example of a particular type of regime.

IFPRI is organizing a policy workshop to take place in 1987 where this series of country studies on the effects of foreign trade and exchange rate policies on agricultural growth will be presented. These studies will provide a broad picture of the process through which trade and exchange rate policy influences agricultural growth in developing countries, and they will provide supporting quantitative evidence of their relative effects.

Professor T. Ademola Oyejide, from the Department of Economics, University of Ibadan, came to IFPRI as a visiting fellow to work on this study on Nigeria. Because of his experience in trade and exchange rate policy in Nigeria, including his well-known study on the structure of industrial protection, and his knowledge of the agricultural sector, he is particularly qualified to develop the analytical framework and implement the empirical analysis.

This study was partially funded by the Ford Foundation's office in Lagos, Nigeria, and by the International Development Research Centre of Canada. IFPRI is particularly grateful to these two organizations for their encouragement and support of this work on Sub-Saharan Africa.

John W. Mellor

Washington, D.C.
October 1986

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This study is part of a series dealing with the impact of trade and exchange rate policies on agricultural incentives in several countries. It was funded by the International Food Policy Research Institute (IFPRI), the International Development Research Centre (IDRC) of Canada, and the Ford Foundation. It is a great pleasure to acknowledge the generous financial support of these organizations.

Work on the project was carried out at IFPRI and the University of Ibadan, both of which provided a conducive atmosphere for work. However, my teaching and administrative responsibilities as head of the Department of Economics at the University of Ibadan created unavoidable distractions and delays that must have sorely tried the patience of my colleagues at IFPRI.

John W. Mellor, director of IFPRI, maintained a sustained and lively interest in this research project throughout its duration. His general encouragement and incisive comments have been valuable in shaping its overall direction. Alberto Valdés, the project leader, offered useful comments, suggestions, and criticisms at every stage of the research. His ability to succinctly articulate policy issues and link them with a relevant theoretical framework and analytical techniques assisted me immensely and is gratefully acknowledged.

I am also indebted to Larry Sjaastad, Romeo Bautista, Tshikala Tshibaka, and Chris Delgado, with whom various aspects of this study were discussed.

My deep appreciation for competent computational assistance, pleasantly provided, is due to Steve Haykin.

Finally, my greatest debt is to the members of my family: Tinuke, Dayo, Dunmomi, Dotun, and Diran. They sustained me and at the same time selflessly allowed me to be away as often as my research commitments required. Much more is owed to them than can be conveyed in this acknowledgment.

1

SUMMARY

Before the 1970s agricultural exports were the backbone of the Nigerian economy. By the mid-1970s, however, two phenomena caused the average annual growth rate for export crops to decline by 17 percent, food crop production to fall by 2 percent, and domestic retail food prices to soar. The first was the economic boom resulting from the dramatic rise in oil prices, and the second, government policies to encourage industrialization. At a time when GDP was growing by more than 7 percent a year, resources shifted away from agriculture.

This study focuses on the effects of Nigeria's trade and exchange rate policies on agricultural incentives during 1960-82, especially during the 1970s, the period of the oil boom. It attempts to determine the degree of protection granted to agriculture compared with other sectors, and it assesses how these policies affected the allocation of resources both within agriculture and among the other sectors.

Nigeria's development strategy assigned agriculture the role of a resource reservoir for other sectors during the 1960s. Trade, exchange rate, and other macroeconomic policies were designed and implemented to extract resources from agriculture for the development of manufacturing and its infrastructure. The oil boom of the 1970s only strengthened this policy of transferring resources.

Despite its decline, agriculture is still one of the largest sectors in the economy. In 1982 it still accounted for 59 percent of the labor force, down from 75 percent. Because Nigerian agriculture is labor-intensive, labor shortages represent the most significant constraint to growth. Rural wages rose as the result of rural-urban migration at a time when prices paid to farmers were declining.

Before the 1970s the consumer price index for food and the relative food crop prices paid to farmers largely moved together, but during the 1970s they began to diverge. Retail food prices rose 18 percent higher than other costs, while producer prices declined relative to the consumer price index.

Late in the 1970s, the need to diversify the economy brought about a policy reversal. Agricultural production was encouraged by the removal of agricultural export and sales taxes and by increased tariffs and bans on agricultural imports. Agricultural inputs, particularly fertilizers, were subsidized. By 1982, all export crops, except cotton, and all food crops were positively protected.

Exchange rate policy is particularly a problem in boom countries like Nigeria where large capital inflows cause the real exchange rate to appreciate in favor of the domestic currency. But policies to keep the real exchange rate low may impede the growth of agricultural exports. Between 1974 and 1978 Nigeria allowed the naira to appreciate against the U.S. dollar and the British pound, and the resulting overvaluation substantially reduced production incentives for nonoil tradables, particularly agricultural products.

Other trade policies initiated to correct imbalances limit imports to the amount of foreign exchange earned through exports. Quantitative import licenses and exchange controls are costly and complex to administer, however, and encourage government corruption.

Trade and exchange rate policies influence production incentives, which in turn affect the flow of resources among sectors. When one sector is protected, another sector is likely to suffer adverse consequences. In this study an incidence of protection parameter, called omega, measures the effects of protectionism and how the effects are shared among sectors. For example, the study shows that an import tariff resulted in a 55-90 percent tax on exportables, including agricultural exports.

The study concludes that the oil boom adversely affected Nigeria's agriculture. But changes in detrimental trade and exchange rate policies alone will probably not bring about a sufficient expansion of agricultural output. Nor is agricultural price intervention alone likely to solve agriculture's problems. Such changes must be accompanied by programs to develop and distribute new technology, rural infrastructure, and other rural investment. Most importantly, policymakers must consider the effects on other sectors before implementing policies to support growth in one sector.

2

INTRODUCTION

Although developments in the oil sector have dominated Nigeria's economic scene since the mid-1970s, the country remains basically agricultural. More than 70 percent of its population depends on agriculture, which contributes roughly 25 percent of GDP and 60 percent of nonoil exports. In fact, before the rapid rise in oil prices and the massive increase in oil export revenue, Nigeria was a major exporter of agricultural produce, especially cocoa, groundnuts, cotton, palm oil, palm kernel, and rubber. Since then, however, both the volume and the range of agricultural exports has declined sharply, and agricultural imports have increased dramatically. In addition, Nigeria no longer produces sufficient food for the country's large and rapidly growing population.

The 3-4 percent average annual output growth rates for agricultural export and food crops achieved in the 1950s and 1960s gave way to substantial declines throughout the 1970s and into the early 1980s. The average annual rate of real output growth for food crops fell to about 2 percent a year during the 1970s. Between 1970 and 1975, however, the output of export crops dropped 17 percent, and by 1982 export crop output had declined by more than 20 percent. Reflecting the dismal performance of Nigeria's agricultural sector, the food import bill rose more than 10-fold in 1970-80, and domestic food prices also rose dramatically.

In contrast to the poor output growth performance of the agricultural sector, the average annual real GDP growth rate was more than 7 percent during 1970-80. This reflected the rather swift recovery from the 1967-70 civil war, combined with the effects of the oil boom, particularly in 1973-75 and 1979-80. This overall growth rate was nearly double the rate of about 4 percent during the 1950s and the 1960s.

Several macroeconomic policies and events presumably have contributed to the extraordinary decline of Nigeria's agricultural sector at a time of high overall growth. A major factor is Nigeria's whole-hearted embrace since the 1960s of the import-substitution-industrialization strategy so popular among the developing countries. Under this scheme, domestic manufacturing industries have received high levels of protection through tariffs and other quantitative import restrictions. Although this has provided large incentives for industry, it has had the opposite effect on other sectors, particularly agriculture. A second major event has been the oil boom with its associated capital inflows. This has helped to establish an exchange rate regime that sustains an overvalued domestic currency, which has squeezed nonoil tradables, particularly agricultural commodities.

Several important policy issues are raised by the disincentive effects on agricultural production—both for export and for domestic consumption—of major macroeconomic policies, particularly trade and exchange rate policies. Some of these issues are general in the sense that they pose questions about the global impact of these policies on production incentives. Others relate primarily to the different effects of policies on production incentives across and within sectors of the economy.

The objectives of this study derive from these policy concerns. More specifically, it attempts first, to establish, in terms of relative prices, the degree of protection accorded by trade and exchange rate policies to agriculture vis-à-vis other sectors of the economy; second, to assess how trade and exchange rate policies affect the allocation of resources among sectors and within agriculture itself, particularly in the production of food and export crops; and finally, to examine how a dominant sector, petroleum oil, has affected production incentives in agriculture.

Because of significant data limitations, it has not been possible to provide definite answers to some of the important questions raised in this study. But until more detailed studies based on better data are available, this study demonstrates the effects on agriculture of economywide trade and exchange rate policies and the extent to which the "oil syndrome" has adversely affected both food and export crop components of agriculture.

3

STRUCTURE AND GROWTH OF NIGERIAN AGRICULTURE

Agriculture has always been a large sector of Nigeria's economy.[1] In 1950, it accounted for 69 percent of GDP, but its share of GDP fell rather rapidly to only 49 percent in 1970 and to about 22 percent in 1982. But agriculture has continued to be the most important employer of labor, accounting for 64 percent of the total labor force in 1975, and 59 percent in 1982. The performance of this sector remains critical to the economy's overall growth.

Agriculture has important linkages and interrelationships with the rest of the economy.[2] As in most other developing countries where agriculture is a large sector of the economy, Nigerian agriculture interacts with, and is highly vulnerable to, changes in other sectors. This includes macroeconomic policies not specifically targeted at agriculture.

Nigeria's development strategy of the 1960s and 1970s treated manufacturing industry as the leading sector, whereas agriculture was assigned the role of a reservoir that provided resources for or absorbed them from other sectors (particularly industry) as required. The central question in this strategy was how to extract an adequate surplus from agriculture to finance industrial growth and how much food and labor could be transferred from agriculture without destroying the sector's capacity for continued, self-sustained growth.[3] This strategy implied a number of potential conflicts. The need for increased domestic food production may work to the detriment of the objective of increased foreign exchange earnings through the expansion of the output of export crops, particularly where food and export crops are produced in the same production structure. Similarly, when agriculture is heavily taxed to generate the savings for financing industrial capital formation, real farm income and production incentives in agriculture are reduced. As a result, the required expansion of output of food and export crops may not be achievable.[4]

The implied trade-offs in general macroeconomic policy objectives illustrate the importance of linkages between agriculture and other sectors of the economy. They also establish the need for a careful analysis of the structure and growth of agriculture over time in relation to general macroeconomic policies to determine whether these policies assist in creating an environment in which agriculture would serve as a resource reservoir while sustaining itself.

Structure and Performance of Agriculture

The national accounts of Nigeria include four agricultural subsectors—crops, livestock, forestry, and fishing. This study is confined to the agricultural crops subsector, which accounts for 70-80 percent of total agriculture. The crops subsector has two major subdivisions, crops produced for domestic consumption and those produced for exports. This broad classification is not exclusive. Some of the traditional export crops have also been used for domestic food. Examples include palm oil, tea, coffee, and groundnuts, particularly in the form of groundnut oil. In fact, some have dropped out of the list of export crops in more recent times, partly as a result of the decline in total production but also because of increased domestic demand for their use as food. Thus, agricultural exports as a proportion of total exports fell from 97 percent to 4 percent from 1960 to 1980.

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[1] Appropriate data for measuring the relative significance of agriculture in Nigeria's economy are available from Nigeria, Federal Office of Statistics, *National Accounts of Nigeria* (Lagos: FOS, 1978); and Nigeria, Federal Office of Statistics, *Economics and Social Statistics Bulletin* (Special Series), January 1984.

[2] See Bruce F. Johnston and John W. Mellor, "The Role of Agriculture in Economic Development," *American Economic Review* 51 (September 1961): 566-593.

[3] See Food and Agriculture Organization of the United Nations, *Agricultural Development in Nigeria, 1965-1980* (Rome: FAO, 1986).

[4] An earlier study of this conflict is reported in Godwin E. Okrume, *Foreign Trade and the Subsistence Sector in Nigeria: The Impact of Agricultural Exports on Domestic Food Supplies in a Peasant Economy* (New York: Praeger, 1973).

Traditionally, the major export crops include cocoa, groundnuts, palm kernel, palm oil, rubber, cotton, coffee, tea, and soybeans. By the 1980s, cocoa was providing more than 50 percent of total agricultural export earnings. Domestic demand also exists for some of the exportable crops such as cocoa and cotton, as industrial raw materials.[5] The food crops category also is not exclusive because it includes both traded and nontraded food crops. The major traded food crops are maize, rice, and wheat. Other food crops include root crops such as yams, cassava, and cocoyams, as well as several types of grains, such as millet and sorghum and pulses. Many of these are potentially tradable. Hence, incentives for their production and consumption are significantly influenced by traded food prices.

There is considerable disagreement among the different data sources about the actual amounts and growth rates of agricultural crops produced in Nigeria.[6] As a result, available estimates diverge widely. The differences are particularly large for the nontraded root crops, including cassava, yams, and cocoyams. There is also reason to suspect that the production figures for exportable crops may be underestimated, because the share of crops that are domestically consumed, such as palm oil and groundnuts, is not known with a reasonable degree of certainty.[7]

Because of these problems, it is not possible to provide generally accepted figures that demonstrate the structure and performance of Nigerian agriculture in a definitive way. In spite of this reservation, the following is an attempt to sense the general trends. The national accounts indicate that during 1950-57, GDP grew at 4.0 percent, during 1960-66 at 4.7 percent, and during 1970-75 at 8.4 percent per year in constant prices. During these same periods, the output of agricultural crops grew 3.2 percent, 1.3 percent, and −3.6 percent per year. Teal has produced revised estimates for these periods showing the growth patterns of export and food crops separately.[8] According to these estimates, the output of export crops grew at an average annual rate of 4.7 percent in 1950-57, 7.4 percent in 1960-65, and declined by 17.3 percent in 1970-75. The corresponding average annual growth rates for food crops were 3.2 percent, 0.4 percent, and −2.1 percent. The general trend implicit in these figures is that total real output of agricultural export crops declined at an annual rate of about 30 percent during the period 1973-82. For the food crops, however, Norton estimates that domestic production probably grew at an average rate of 2.7 percent, which is no growth at all on a per capita basis for 1973-82.[9] In other words, the growth performance of Nigerian agriculture worsened between

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[5] Nigeria, Federal Office of Statistics, *National Accounts of Nigeria.*

[6] Data sources include the following agencies in Nigeria: Federal Office of Statistics, which has primary responsibility for all official data gathering, processing, and publication; Federal Ministry of Agriculture; and Central Bank of Nigeria. Sources outside Nigeria are the Food and Agriculture Organization of the United Nations and the U.S. Department of Agriculture.

[7] See Francis Teal, "The Supply of Agricultural Output in Nigeria, 1950-1974," *Journal of Development Studies* 19 (January 1983): 191-206, and M. O. Ojo, "Food Supply in Nigeria, 1960-1975," in Central Bank of Nigeria, *Economic and Financial Review* 15 (December 1977).

[8] Teal, "Supply of Agricultural Output."

[9] See Roger D. Norton, "Pricing Policy Analyses for Nigerian Agriculture," West Africa Regional Office, The World Bank, September 1983 (mimeographed).

1960 and 1982, with the rate of decline being particularly high since the mid-1970s. Domestic food production appears to have stagnated, especially since the mid-1970s, while output of export crops has fallen rather dramatically.

The trend in domestic agricultural crop production is reflected in the changing pattern of agricultural trade. The transformation of Nigeria from a net exporter of agricultural crops to a large-scale importer of agricultural food products was particularly marked during the period 1973-82. Export earnings fell from 332 million naira (₦) in 1973 to about ₦120 million in 1982,[10] as the major agricultural export crops decreased in number, output, and value. In contrast, increases in income and changes in consumer taste boosted the import of food products. Imports of some grains, such as wheat, rice, and maize, grew at an average annual rate of more than 50 percent, with the result that the value of agricultural commodity imports rose from about ₦126 million in 1973 to well over ₦2,000 million in 1982. It would appear that traded crops now constitute a fairly large proportion of Nigeria's total food supply.

Constraints on Agricultural Growth

The economic performance of Nigerian agriculture has been influenced since the mid-1970s by the structural changes in the economy that have accompanied the oil boom (see Chapter 5). The principal mechanisms through which the oil boom has affected agriculture are the relative product and factor prices.

Labor, land, capital, and water are the primary resources used in Nigeria's traditional agriculture. Therefore, inadequacies in the labor market, the land tenure system, technology, and infrastructural facilities represent significant impediments to expanding agricultural output.

Research and development of improved seeds, as well as the introduction of new technological packages through extension services and the provision of infrastructural facilities, accompanied the expansion of agricultural export crops during the late 1950s and early 1960s. Only recently have similar facilities been extended to the domestic production of food crops. In fact, as late as 1969, major production programs for food crops were considered unnecessary.[11] Although use of fertilizer and chemical inputs is spreading rapidly, it is still true, by and large, that increases in food production are based on the land and labor of the small-scale farmer who uses traditional technology with rudimentary capital in a rainfed system, just as in the past. Land does not constitute a binding constraint in this system. It is estimated that cultivated land totals 34 million hectares out of 72 million hectares of potentially cultivatable land.[12] In fact, the predominant fallowing practices are based on the existence of a fairly large average surplus amount of land.[13] In comparison to land, labor represents a major constraint on the expansion of agricultural output in Nigeria's prevailing farming system.

There has been a growing consensus in recent years that labor shortages—and the corresponding high costs of labor—have played a central role in agriculture's poor performance.[14] The problem of labor shortage is worsened by the unusually labor-intensive nature of Nigerian agriculture. Evidence shows that mixed crop farming enterprises require more than 100 man-days per hectare per year and that labor intensity for root crop production reaches 200 man-days per hectare per year.[15] Macroeconomic developments in the rest of the economy have contributed to the labor shortage problem of agriculture. Expanding off-farm income-earning opportunities[16] and the introduction of universal primary education[17] in the 1970s boosted the rate of rural-urban migration,[18] to the detriment of the agricultural sector.

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[10] In 1982, one Nigerian naira (₦) was equivalent to U.S. $1.49.

[11] See Consortium for the Study of Nigerian Rural Development, *Strategies and Recommendations for Nigerian Rural Development, 1969-1985* (Lagos: CSNRD, 1969).

[12] See Norton, "Pricing Policy Analyses," p. 2.16.

[13] The fallowing farming practice is also referred to as a system of shifting cultivation. See Food and Agriculture Organization of the United Nations, *Agricultural Development in Nigeria;* and Consortium for the Study of Nigerian Rural Development, *Strategies and Recommendations.*

[14] See Carl K. Eicher and Doyle C. Baker, *Research on Agricultural Development in Sub-Saharan Africa—A Critical Survey,* International Development Paper No. 1 (East Lansing, Mich.: Michigan State University, 1982).

Another significant development is the increased dependence on hired agricultural labor instead of family labor.[19] The macroeconomic policies that have resulted in high rates of rural-urban migration have clearly contributed to the increased need for hired labor on the farms. This shift has tended to increase explicit production costs in agriculture. In various Agriculture Development Projects (ADPs) located in the northern part of Nigeria, the average farmer spent about ₦200 on hired labor in 1981 to earn an average farm income from crop sales of about ₦ 500.[20] In the southwestern part of Nigeria, there is extensive reliance on contract harvesting with teams of hired labor coming in regularly from other parts of the country. As a result, hired labor now represents a much more significant part of the farmer's production costs across the country than in the 1960s. Just as off-farm work opportunities have forced farmers to rely more on hired labor, the costs of hired labor have risen in line with the rapidly increasing urban wage rate. This has created severe pressures on Nigerian agriculture from the labor cost side.

There are no official time-series data on rural wage rates. However, a series constructed from available scattered point estimates and their implicit rates of growth over time is presented in Table 1.[21] When the index of the estimated nominal rural wage rate is deflated using the index of consumer prices, an index of real rural wages is produced. A similar procedure is used to derive the real minimum wage rate index. It is clear from these estimates that both the rural wage rate and the minimum wage rate increased rapidly through the 1970s and into the 1980s (Figure 1). This rapid increase in the nominal wage rate is carried over to the real rate. To the extent that the nominal rural wage rate and the minimum wage rate have grown much faster than the consumer price index, the indexes of real rural and minimum wage rates have been characterized by an upward trend at least until 1975, when the rural wage began to decline (see Figure 2). The rate of growth of the real rural wage rate was particularly rapid during 1973-75, but it tapered off during 1975-82.

Given a land surplus, it is possible to increase agricultural output by expanding cultivated area without a significant breakthrough in yield technology. However, an increase in area cultivated would have to be worked with hired labor because the

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[15] Norton, "Pricing Policy Analyses."

[16] Off-farm income-earning opportunities have expanded, particularly during the 1970s, as the service sector has grown rather rapidly with the increase in income induced largely by the oil boom.

[17] Primary school enrollment increased from less than 40 percent to more than 95 percent of school-age population during the 1970-80 decade.

[18] No time-series data on the rate of rural-urban immigration are available. However, most observers believe that the rate has been high. See Eicher and Baker, *Research on Agricultural Development in Sub-Saharan Africa.*

[19] In most other Sub-Saharan African countries, the use of hired labor is not extensive (Eicher and Baker, *Research on Agricultural Development in Sub-Saharan Africa).* In Nigeria, the pattern was roughly the same during the 1960s, except at harvesting time when the use of hired labor might exceed 20 percent of total labor. See David W. Norman, *Economic Analysis of Agricultural Production and Labor Utilization among the Hausa in the North of Nigeria,* African Rural Employment Paper No. 4 (East Lansing, Mich.: Michigan State University, 1973). However, Norton shows that a marked shift toward greater dependence on hired labor occurred during the 1970s (Norton, "Pricing Policy Analyses").

[20] Norton's figures are based on samples drawn from 10 agricultural development projects in Nigeria (Norton, "Pricing Policy Analyses," p. 53).

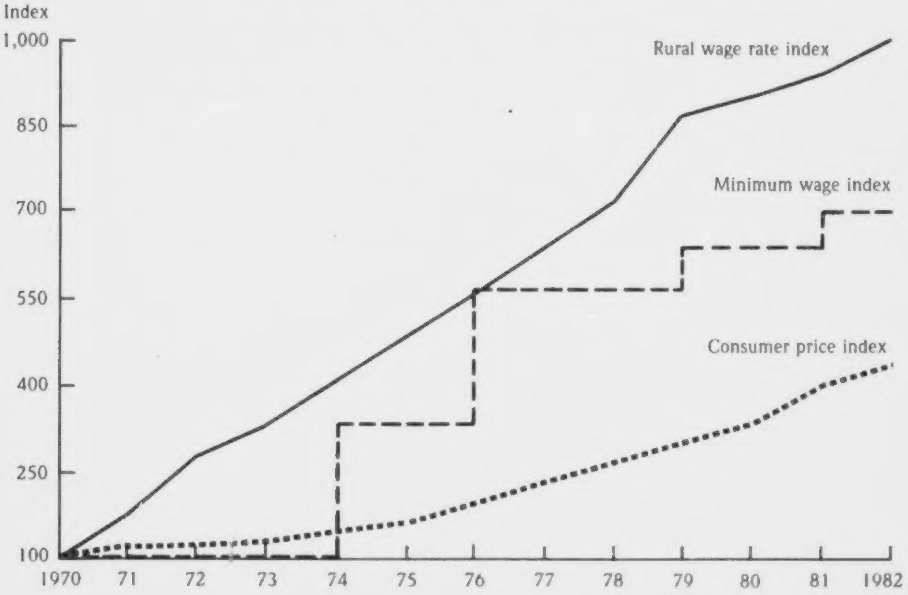
[21] These include estimates of rural wage rates of ₦0.60 for 1970, ₦5.20 for 1979, and ₦6.50 for 1982, as reported in Norton, "Pricing Policy Analyses."

Table 1—Minimum and rural wage rates, 1970-82

Year	Estimated Rural Wage Rate	Rural Wage Rate Index	Minimum Wage Rate Index	Consumer Price Index	Real Rural Wage Rate Index	Real Minimum Wage Rate Index
	(naira/day)			(1970 = 100)		
1970	0.60	100	100	100	100	100
1971	1.06	177	100	116	153	86
1972	1.52	253	100	119	213	84
1973	1.98	330	100	127	260	79
1974	2.44	407	337	144	283	234
1975	2.90	483	337	161	300	209
1976	3.36	560	561	198	283	283
1977	3.82	637	561	231	276	243
1978	4.28	713	561	269	265	209
1979	5.20	867	645	300	289	215
1980	5.40	900	645	331	271	195
1981	5.60	934	702	400	233	176
1982	6.00	1,000	702	431	232	163

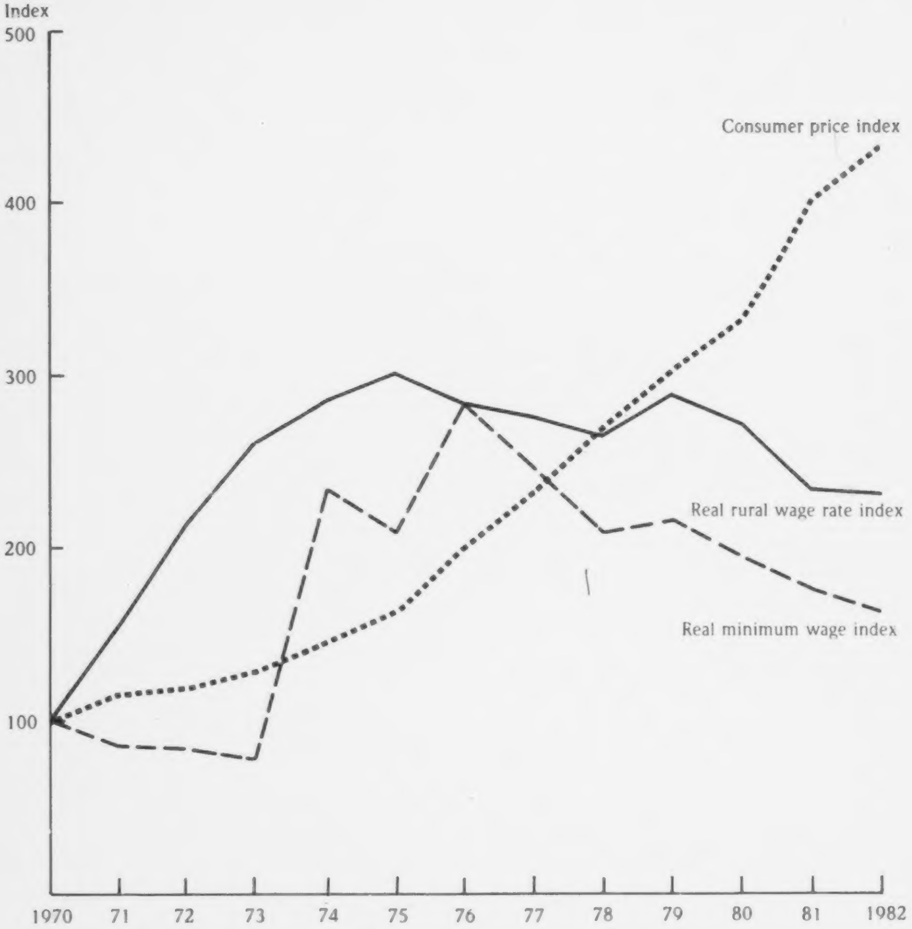
Sources: The rural wage rate is constructed from scattered point estimates because there are no official time-series data on wages. The minimum wage rate index is derived from budget documents provided by the Federal Government of Nigeria. Consumer prices were obtained from the Nigerian Federal Office of Statistics in Lagos. The real rural wage and real minimum wage rates are obtained by using the index of consumer prices as a deflator.

Figure 1—Nominal wage rates and consumer price indexes, 1970-82



Sources: The rural wage rate is constructed from scattered point estimates because there are no official time-series data on wages. The minimum wage rate index is derived from budget documents provided by the Federal Government of Nigeria. Consumer prices were obtained from the Nigerian Federal Office of Statistics in Lagos.

Figure 2—Indexes of real minimum and real rural wage rates, and consumer price index, 1970-82



Sources: The rural wage rate is constructed from scattered point estimates because there are no official time-series data on wages. The minimum wage rate index is derived from budget documents provided by the Federal Government of Nigeria. Consumer prices were obtained from the Nigerian Federal Office of Statistics in Lagos. The real rural wage and minimum wage rates are obtained by using the index of consumer prices as a deflator.

existing land tenure system precludes large-scale mechanization. This is the sense in which labor and its rising costs represent the principal constraint on the growth of Nigerian agriculture.

Agricultural Prices

A sufficient increase in output prices could, in principle, offset the high labor costs confronting Nigerian farmers. Hence, an examination of agricultural output prices is required.

Government intervention in Nigeria's agricultural marketing and pricing system makes a distinction between export and food crops even though a number of agricultural commodities belong in both categories. Except for these cases, export crops traditionally have had their marketing channels and domestic produce prices determined by the policies and operations of commodity boards. Through time, Nigerian marketing (commodity) boards have played an important role in organizing the purchase and sale of export crops such as cocoa, rubber, groundnuts, cotton, palm kernel, palm oil, and soybeans.[22] Producers are required by law to sell their crops at officially determined prices to the commodity boards, which are the sole exporters of specified crops.

Intervention in food crops is much more limited and started much later. Purchase and sale is handled by the private sector. Government intervention is limited to setting official guaranteed minimum prices at which the appropriate commodity board would act as a buyer of last resort. Although marketing boards for export crops emerged in the 1940s, government involvement in setting guaranteed minimum prices for food crops did not begin until the mid-1970s.

Traditionally, marketing boards have been used as fiscal agents in relation to producers of agricultural export crops. Farmers have been paid well below world market prices for their crops. For example, the typical Nigerian producer of groundnuts was paid a price so low that it amounted to a tax of approximately 68 percent in 1950, although the tax element was down to about 36 percent by 1965[23] and by 1982 appears to have been completely replaced by subsidy. Since then, domestic producer prices for most export crops have been higher (at the official exchange rate) than the corresponding international prices. On the average, the ratio of domestic prices to international prices has been about 1.97.

Guaranteed minimum prices are established for the following scheduled food crops: beans, maize, millet, rice, guinea corn, and wheat.[24] Most nontraded food crops are excluded from this scheme. The guaranteed minimum prices serve as a below-market safety net rather than as a floor. They are also often set at fixed levels for several years at a time. The result is that, in all cases, the farm-gate price has been higher than the corresponding guaranteed minimum price. Table 2 shows that for almost all crops, the guaranteed minimum price is less than 50 percent of the retail price. It is a higher proportion of the farm-gate price, but even then, it comes close only in the case of rice (about 92 percent). It is not surprising, therefore, that because the farmer is free to sell on the open market, the commodity boards purchase very little of these commodities.

An examination of the evolution of prices within agriculture and between agriculture and the overall economy for the 1950s, the 1960s, and the period since 1970 illustrates the impact of policy changes and other exogenous factors on inter- and intrasectoral price movements. Table 3 reveals that during the 1950s, agricultural prices moved more or less in line with the consumer price index (CPI). The implicit deflators for agriculture and the CPI were

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[22] See Central Bank of Nigeria, *Annual Report and Statement of Accounts* (Lagos: CBN, various years).

[23] See Ogunfowora, "Conceptualizing Increased Resource Demand and Product Supply Inducing Policies in Peasant Agriculture," *Nigerian Journal of Economic and Social Studies* (March 1973): 191-201.

[24] P. Armington, "A Theory of Demand for Products Distinguished by Place of Production," *IMF Staff Papers* 16 (March 1969).

Table 2—Relative domestic food crop prices, 1982

Crop	Guaranteed Minimum Price	Retail Price	Farm-Gate Price	Minimum Price as a Share of Retail Price	Minimum Price as a Share of Farm-Gate Price
		(naira/ton)		(percent)	
Beans	362	1,032	810	35.1	44.7
Maize	210	592	680	35.5	30.9
Millet	231	563	330	41.0	70.0
Rice	596	1,071	650	55.6	91.7
Guinea corn	220	532	340	41.4	64.7
Wheat	280	729	n.a.	38.4	n.a.

Source: Central Bank of Nigeria, *Annual Report and Statement of Accounts* (Lagos: Central Bank, 1983).
Note: n.a. means not available.

quite close. Intrasectoral prices also showed few significant differences. Thus, the implicit deflators for domestic food crops and export crops were close and moved with the CPI.

Unlike the 1950s, significant differences in relative prices began to emerge during the 1960s (Table 4). The CPI for food only moved with the overall CPI so that the relative food price index was more or less constant. CPI for food represents the retail prices of food products and reflects the price paid by the consumer rather than that received by farmers. The more appropriate price for farmers is the farm-gate price deflated by CPI, which is captured by the relative food crops price. A comparison of the CPI for food and the relative food crops price shows that they largely move together, and hence the prices received by the farmer did not exhibit a significant upward trend relative to the general level of prices, as reflected by either the CPI or the CPI for food. On the other hand, the relative price index for export crops (the index of export prices deflated by CPI) decreased relative to the overall CPI during the 1960s.

Agricultural prices diverged even further between 1970 and 1982 (Table 4). The food component of CPI rose much faster than the overall CPI and was about 18 percent higher by year than the overall index. Thus

Table 3—Relative prices of agricultural output, 1950-57

Year	Implicit Deflator for Agriculture[a]	Implicit Deflator for Domestic Food Crops[a]	Implicit Deflator for Export Crops[a]	Consumer Price Index[b]
1950	71.5	70.7	75.5	75.0
1951	80.6	70.9	104.7	79.2
1952	76.9	68.7	102.5	77.1
1953	81.7	76.5	101.4	80.9
1954	90.5	86.3	107.6	86.9
1955	93.5	91.3	104.6	92.3
1956	98.0	97.7	99.1	99.2
1957	100.0	100.0	100.0	100.0

Source: Francis Teal, "The Supply of Agricultural Output in Nigeria," *Journal of Development Studies* (January 1983): 191-206.

[a] Sectoral implicit deflators are components of the aggregate implicit GDP deflator.

[b] A wholesale price index is not available.

Table 4—Relative prices of agricultural crops, 1960-69 and 1970-82

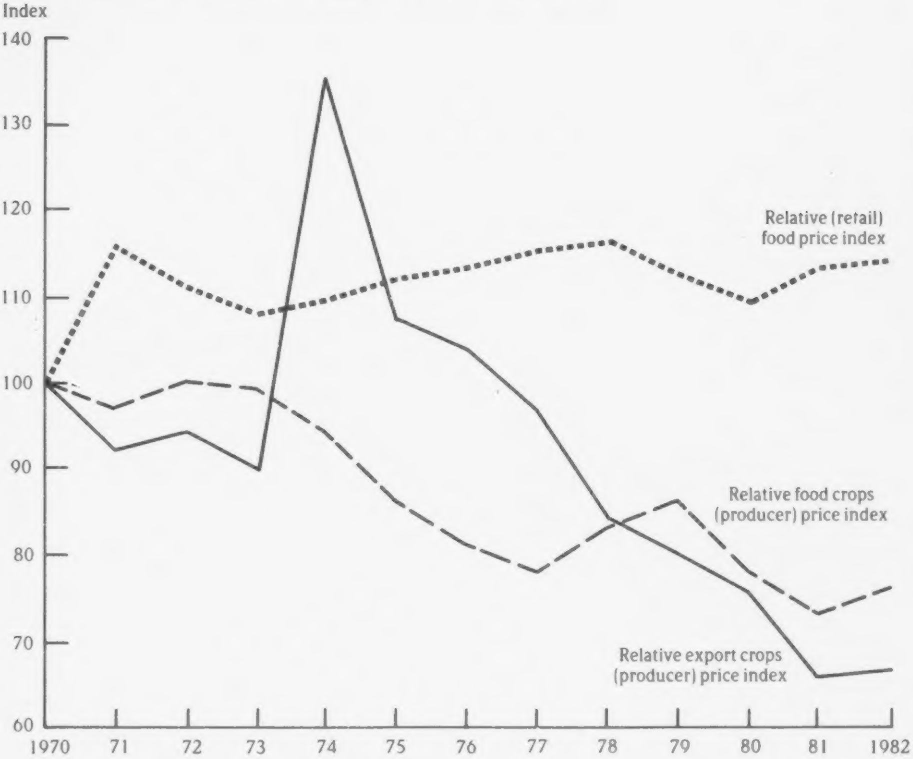
Period/ Year	Consumer Price Index	Consumer Price Index (Food)	Export Crops Price	Relative Export Crops Price	Food Crops Price	Relative Food Crops Price
				(1960 = 100)		
1960-69						
1960	100	100	100	100	100	100
1961	100	110	95	89	108	102
1962	112	118	84	75	119	106
1963	109	108	83	76	114	105
1964	110	106	86	78	114	104
1965	114	111	90	78	113	99
1966	126	133	79	63	151	120
1967	121	119	83	69	143	118
1968	120	113	82	68	128	106
1969	132	134	77	58	136	102
				(1970 = 100)		
1970-82						
1970	100	100	100	100	100	100
1971	111	129	107	92	112	97
1972	119	132	112	94	119	100
1973	127	137	114	90	126	99
1974	144	157	194	135	135	94
1975	161	181	174	108	139	86
1976	198	223	205	104	161	81
1977	231	265	223	97	181	78
1978	269	312	225	84	222	83
1979	300	337	241	80	257	86
1980	331	362	251	76	259	78
1981	400	453	265	66	291	73
1982	431	493	290	67	327	76

Sources: Francis Teal, "The Supply of Agricultural Output in Nigeria," *Journal of Development Studies* (January 1983); and Nigeria, Federal Office of Statistics, *Economic and Social Statistics Bulletin* (Special Series), January 1984.

Notes: Relative prices are deflated by the consumer price index. The food and export crops prices are producer prices, whereas the consumer price index for food represents a retail price.

the relative food price index (the retail index) trended upward, but the prices received by the farmer declined relative to the overall CPI throughout 1970-82. The relative export price index (the producer price index) declined relative to the CPI between 1970 and 1973, increased between 1974 and 1976, and declined again between 1977 and 1982. These divergent movements in relative agricultural prices raise a number of issues for policy analysis (see Figure 3).

Figure 3—Food and export crop prices, 1970-82



Sources: Francis Teal, "The Supply of Agricultural Output in Nigeria," *Journal of Development Studies* (January 1983); and Nigeria, Federal Office of Statistics, *Economic and Social Statistics Bulletin* (Special Series), January 1984.

Note: Relative prices are deflated by the consumer price index.

4

SURVEY OF ECONOMIC POLICIES

Nigeria has experimented with a wide variety of economic policies since the late 1950s. The policy environment during the 1960s, which supported an import-substitution-industrialization strategy of economic development, gave birth to an inward-looking trade regime in which high tariff walls protected local manufacturing.[25] More recent developments in the economy, particularly since the mid-1970s, have caused basic policy goals to be redefined, especially for agriculture.

The Policy Setting

The primary focus of Nigeria's economic policies has, traditionally, been the protection of local industries, modified at times by concerns for balance-of-payments problems.[26] More recently, however, the oil boom and its consequences have directed increased policy attention toward the need to provide growth incentives for agriculture.

As a capital-deficit, oil-exporting country committed to rapid economic development, the overriding focus of general economic policy in Nigeria, as stated in National Development Plan Documents, is how to utilize its short-term oil revenue windfall to effect a transition to a diversified, broad-based economy in the longer term. The need to diversify and restructure the national economy toward self-sustaining growth and development has direct policy implications for agriculture. It requires the economy to move away from the dominance of the oil sector toward expansion of domestic production, especially in agriculture. One of the major long-run goals of general economic policy in Nigeria is to maintain a viable agricultural sector during and after the oil era. Agricultural policies to achieve this goal can be assumed to include: achievement of self-sufficiency in the domestic production of food; revival of agricultural export crops production; generation of rural and agricultural employment; and improvement of rural income and welfare.

The food security goal has its roots in the balance-of-payments problem, which has become intractable since 1976. Thus in the short run there is policy emphasis on the need to reduce imports of agricultural commodities (mostly food), but the real long-run policy concern appears to be the need to ensure a favorable balance-of-payments position in the agricultural sector. Achievement of this objective would return the country to a situation similar to that before the oil boom, when net foreign exchange earnings from agriculture formed the basis of general development strategy, especially industrialization.

The production unit appropriate to this strategy should be the main focus of agricultural policy. The smallholder farming unit accounts for more than 90 percent of domestic food and export crops production.[27] In spite of recent official flirtation with large-scale farming and agricultural mechanization, it seems clear that significant expansions in agricultural output will have to come from the small-scale farmer.[28] Improvement of his productivity and production environment should therefore be the target of agricultural policy.

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[25] This was a fairly common development strategy in developing countries as shown by such studies as Bela Balassa, *The Structure of Protection in Developing Countries* (Baltimore: Johns Hopkins University Press, 1971).

[26] Policy evolution in Nigeria is extensively discussed in P. Kilby, *Industrialization in an Open Economy: Nigeria 1945-1966* (Cambridge, England: Cambridge University Press, 1969); and T. Ademola Oyejide, *Tariff Policy and Industrialization in Nigeria* (Ibadan, Nigeria: Ibadan University Press, 1975).

[27] See Food and Agriculture Organization of the United Nations, *Agricultural Development in Nigeria.*

[28] See World Bank, "Large Scale Farming and Mechanisation," *Nigerian Agricultural Sector Review* (Washington, D.C.: World Bank, 1979).

Types of Agricultural Policies

Agricultural policies to improve agriculture's performance can be conveniently grouped as follows: those aimed at altering the basic structure of farmers' production environment; those relating to the size and price of food imports, as well as the pricing of agricultural export crops; and those concerning sources of intermediate agricultural inputs, whether imported or domestically produced. (The latter two are discussed in the section on trade policy.)

Agricultural policies in the first group include research and development of improved seeds and technology, the provision of extension services, and rural infrastructural development. Although these are longstanding policy measures, their focus has changed since the mid-1970s. Up to that time, most of the agricultural research institutes focused on export crops, in accordance with government's preoccupation with cash crop expansion. Little or no attention was paid to improving seeds and production technologies of food crops.[29] In recent times, however, additional research facilities have been established to examine the specific problems of food crops such as grains and root crops.[30]

The existing network of extension services, which was quite active during the 1960s in dealing with the spread and expansion of export crops, was beginning to wither away with the emergence of oil exports (and hence less reliance on agricultural export crops) in the early 1970s. Under the agricultural development projects and area schemes, jointly financed by the Nigerian government and the World Bank, extension services are being revived, along with the provision of rural infrastructure and improved rural marketing systems.[31]

Another major policy aimed at altering the farmers' production environment is subsidized agricultural credit. Recognizing that the Nigerian land tenure system and high rate of illiteracy among smallholder farmers hinder their access to credit from the banking system, the government has adopted two measures to remove this bottleneck. First, bank loans for agricultural projects were provided at concessionary interest rates of 6-8 percent during the last five years compared to rates of 12-14 percent for most other economic activities.[32] Second, agricultural loans are insured by the government under the Agricultural Credit Guarantee Scheme to assist smallholder farmers who are unable to provide acceptable collateral for bank loans.

In addition, a special financial institution—the Nigerian Agricultural and Cooperative Bank—is funded by the government to provide agricultural credit to individual farmers and farmers' cooperatives.

Trade Policy

Nigerian trade policy continues to influence intersectoral terms of trade between agriculture and other sectors of the economy, particularly on issues such as the size and prices of agricultural imports, the prices of agricultural export crops, and the size and prices of imports of intermediate agricultural inputs and agricultural capital equipment. Its direct effects on the prices of agricultural inputs and outputs make trade policy a powerful instrument for bringing about desired changes in the agricultural sector. Until recently, however, trade policy's impact on agriculture did not receive much attention. Its use was dictated largely by overall balance-of-payments considerations.

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[29] See Consortium for the Study of Nigerian Rural Development, *Strategies and Recommendation.*

[30] For a list of such facilities and a discussion of their functions, see Francis S. Idachaba, et al., *The Green Revolution: A Food Production Plan for Nigeria* (Lagos: Federal Ministry of Agriculture, May 1980).

[31] Agricultural Projects Monitoring, Evaluation, and Planning Unit, *Project Completion Reports* (Kaduna, Nigeria: Federal Department of Rural Development, 1982).

[32] Monetary policy circulars issued annually contain information on the government-regulated interest rate structure. They are reproduced and discussed in various issues of Central Bank of Nigeria, *Annual Report and Statement of Accounts.*

The main trade policy instruments in Nigeria are import tariffs, export duties, and quantitative restrictions on imports and exports. Quantitative restrictions occur either in the form of import and export bans placed on particular commodities, or specific licenses required for the import or export of given commodities. During periods of extreme pressure on foreign reserves, importation of a wide range of commodities is often banned entirely, while a large number of other commodities may be restricted through the use of specific import licenses. Thus, between 1982 and 1983, almost 200 commodities were placed on the list of commodities subject to specific import licenses, and the exportation of many food crops was banned.

Export duties, ranging between 5 and 60 percent, were applied to agricultural export crops such as cocoa, rubber, cotton, palm oil, palm kernel, and groundnuts throughout the 1960s and the early 1970s. When large amounts of revenue became available to the government from the oil sector, however, the need to rely heavily on revenue from agricultural export taxes ceased. This also coincided with the recognition that agricultural export crops needed to be revived. Hence, there have been no export duties on agricultural crops since the mid-1970s. Until the 1970s, in addition to explicit export taxes, agricultural exports were also subjected to implicit taxation through the marketing and pricing system of the commodity marketing board. As in many other developing countries, the marketing boards in Nigeria had monopoly powers over the exports of agricultural crops and used these powers to tax producers of export crops by paying them well below world market prices.[33]

On the import side, trade policy in Nigeria has traditionally protected local manufacturing industries by imposing relatively high import duties on finished products and very low or no import duties on industrial raw materials and intermediate capital inputs. This system has gradually been extended to cover the agricultural sector. Import duties on food commodities such as maize, rice, wheat, and sorghum were raised to between 50 and 100 percent between 1978 and 1982, and agricultural inputs have been provided at subsidized rates.

The result is that most imported agricultural commodities are not only subject to high import tariffs, but also to fairly stringent quantitative restrictions. For many agricultural commodities, these restrictions influence domestic prices more than tariffs because large quantities of food imported by state and federal governments enter the country duty-free. Guaranteed minimum prices have been established for many of the domestically produced food crops, including beans, maize, millet, rice (paddy and milled), guinea corn, and wheat. However, this scheme has had little or no effect since these prices are kept constant for several years at levels far below the prevailing market prices.[34]

Trade policy on the import of raw materials for inputs and capital equipment for local manufacturing activities is generous. Tariff rates for such goods range from 0 to 15 percent. Trade policy for agricultural inputs and capital equipment has become even more generous during the last seven years. An extensive program of subsidies for intermediate agricultural inputs covers fertilizer, improved seed varieties, herbicides, insecticides, fungicides, and other chemical inputs. It also provides subsidies for capital equipment, particularly tractors.

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[33] See Consortium for the Study of Nigerian Rural Development, *Strategies and Recommendations.*

[34] The guaranteed minimum price (GMP) was kept constant for several years because of the possible inflationary pressure that could arise from a high GMP (Central Bank of Nigeria, *Annual Report and Statement of Accounts,* p. 16).

The subsidy rates are substantial, ranging from 50 percent for tractors to 85 percent for fertilizer. Of all the subsidized inputs, fertilizer appears to have had the greatest response from farmers, as indicated by increasing use. It also appears that at low subsidized prices, an excess demand for fertilizer exists. This has encouraged the emergence of a secondary market in which fertilizer is sold at a higher price. Thus, the farmers' subsidy is probably lower than the official rate. Imports of other agricultural inputs are also subject to quantitative restrictions. This means that farmers' demand for these imports cannot always be satisfied at the official subsidy rate.

Although trade policy has had a substantial influence on both the input and output prices of agricultural commodities, it has not been consistently applied. On several occasions during the last seven years, policy measures were adopted to limit the size of agricultural imports and raise tariffs on imported agricultural commodities in response to balance-of-payments problems. Such fluctuations give confusing signals to producers of agricultural commodities.

Nigerian trade policy also may be biased in favor of traded agricultural commodities. Import restrictions directly affect the output prices of traded commodities as well as prices of agricultural inputs, which may be used to produce both traded and nontraded commodities. However, the direct effect of trade policy on the prices of inputs and outputs of traded commodities is likely to be greater than on nontraded commodities. The impact of trade policy on the prices of the latter is likely to be largely indirect and will depend on whether these nontraded commodities can be substituted for traded ones. Thus, whereas the domestic price of wheat may be directly influenced by the import policy on wheat, the domestic prices of sorghum and millet will probably be influenced by the import price of wheat, which can be used as a substitute.

Exchange Rate Policy

Changes in exchange rate policy have significant consequences for a country's domestic relative prices and economic growth through their effects on the real exchange rate. The real rate is a measure of the terms of trade between the traded and nontraded sectors of the economy, which provides the signal for resource movements. However, governments do not control the real rate directly; their instrument of control is the nominal rate. An exchange rate policy focused on maintaining a target real exchange rate would use nominal exchange rate changes as well as complementary monetary and fiscal policy measures.

Exchange rate policy affects domestic prices of traded and nontraded agricultural commodities through its influence on the entire domestic cost structure. Overvaluation of exchange rates by domestic policies or other factors appears to be a common feature of most developing countries, where it serves as an impediment to producers of agricultural export crops and an implicit subsidy for imports of agricultural and nonagricultural goods and services. An additional problem for a capital-deficit, oil-exporting country like Nigeria is that the high rates of capital inflows that normally accompany an oil boom tend to drive the real exchange rate down. In other words, rapid capital inflows tend to cause the currency to appreciate. A policy that keeps the real exchange rate low impedes growth of the tradable goods sector, particularly agriculture. This explains why some countries with an oil boom have adopted policies to prevent the tradable/nontradable price ratio from continuing to fall as the oil boom proceeds.[35] Exchange rate protection increases the prices of traded goods relative to the prices of nontraded goods and thus enhances relative profitability of the traded goods sector.

In Nigeria, the exchange rate policy appears to have been focused on maintaining a relatively constant nominal rate. However, between 1974 and 1978, the period of massive capital inflows associated with the oil boom, the Central Bank adopted the strategy of gradual nominal appreciation of the naira against the U. S. dollar and the British pound sterling with the primary aim of producing naira exchange rates that would adequately reflect the country's balance-of-payments position.[36] This policy was clearly the opposite of exchange rate protection. It strengthened the tendency of capital inflows to appreciate the real exchange rate. It is not surprising, therefore, that between 1970 and 1980 the nominal rate appreciated by 22.5 percent and the real rate by 55.1 percent.[37] In fact, between 1973 and 1980, when oil-related capital inflows were particularly significant, the real exchange rate appreciated by 61 percent, compared to 17 percent for the nominal rate.

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[35] A good example is the case of Indonesia, which is analyzed in P.G. Warr, "Exchange Rate Protection in Indonesia," *Bulletin of Indonesian Economic Studies* 20 (August 1984): 52-89.

Nigeria's exchange rate policy has had a significant impact on the development of agriculture, particularly since the early 1970s when the naira became substantially overvalued. Both overvaluation and periodic variations in the real exchange rate have substantially reduced production incentives for the nonoil tradable sectors of the economy, particularly agriculture.

Policy Mechanisms

In addition to import tariffs, export duties, and domestic marketing distortion, trade and exchange rate policies have been implemented by import and export bans and licensing and exchange control regulations. For instance, exchange control regulations and import restrictions have been relied upon as the primary instruments for carrying out balance-of-payments adjustments. Thus, Nigeria's overvalued exchange rate has been sustained by limiting imports to the amount of foreign exchange earned by exporting at the disequilibrium exchange rate. Exchange and import controls are relied on because they exert prompt, direct, and predictable effects on the value of imports and can be used to discriminate between "essential" and "nonessential" imports. However, this system suppresses rather than solves the basic underlying problem, works through a costly and complex administrative structure, and encourages the corruption of government officials whose powers and privileges are derived from the exercise of discretion in granting licenses and approvals.[38] A glaring example of the negative effects of quantitative import restrictions is provided by the movement of domestic rice prices in recent years. They have varied as much as 300 percent within a year largely in response to variations in the issuance of import licenses. Although this may be an extreme case, short-term variations in quantitative restrictions have introduced substantial price instability for several agricultural commodities. This has reduced the apparent value of incentives provided by the trade regime. One way of establishing a more reliable and less erratic pattern of trade and exchange rate policies would be to rely less on quantitative restrictions and exchange control. Trade and exchange rate policies can be expected to provide better signals for resource movements in the economy if they depend more on the market mechanism for their effectiveness than on bureaucratic discretion.

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[36] See Central Bank of Nigeria, "Note on the Determination of Exchange Rate," internal memo, October 1975.

[37] Analytical attention for determining the exchange rate was on the oil sector, which masked the sustained deficit in the basic nonoil balance-of-payments position. As a result, the implications of real exchange rate appreciation for the nonoil tradables were not explicitly determined. See T. Ademola Oyejide, "Exchange Rate Policy for Nigeria: Some Options and Their Consequences," paper presented at the Workshop on Management of Nigeria's Foreign Exchange Resources, University of Ibadan, March 15, 1985.

[38] See Jagdish Bhagwati, *Anatomy and Consequences of Exchange Control Regimes* (Cambridge: Balinger, for the National Bureau of Economic Research, 1978).

5

AGRICULTURAL PRICE INTERVENTIONS AND INCENTIVES

Government interventions in agriculture are intended to directly or indirectly influence production, factor use, income, and prices. Sometimes, the effect on prices is meant to benefit the producer, at other times the consumer or government. Thus, a cheap food policy is one way of subsidizing urban consumers, whereas a commodity marketing board, which fixes producer prices for export crops below corresponding world market prices, does so to boost government revenue. Of course, a guaranteed minimum price for a commodity can be fixed above the corresponding domestic and world market prices as a means of subsidizing domestic producers. It is clear therefore that government intervention in agricultural prices can have either incentive or disincentive effects on production.

Direct government intervention can, in general, be classified into two broad categories. One type operates in the external sector of the economy and is implemented through either agricultural import or export controls. Import controls include tariffs and quantitative restrictions such as quotas, licensing, and bans. Similarly, exportation of agricultural crops can be controlled through taxes and subsidies as well as through quantitative restrictions, such as export quotas, licensing, or the banning of particular crops. The second type of government intervention works chiefly through domestic agricultural output and input markets. In the agricultural product market, government may provide output price support for particular crops or may administratively fix product prices and thus remove the influence of conventional market forces. In the same way, agricultural inputs may be fixed administratively so as to subsidize users. Both categories of government intervention in agricultural prices are widely used in Nigeria.

Intervention and Competitiveness

Domestic prices of Nigeria's agricultural crops have been compared with the corresponding international prices to indicate the approximate extent to which domestic agricultural production is shielded from external competition. For importables, farm-gate price has been compared with the Nigerian c.i.f. import price plus port and transport charges to the consumption center. For the exportable commodities, the comparison is between the Nigerian f.o.b. price and the farm-gate price plus the appropriate transport and port handling charges. This exercise is beset with inherent problems. The comparisons are rough because no adjustments have been made for quality differences among commodities. In addition, world price equivalents have been translated into domestic currency using the official exchange rate. This procedure does not take account of the substantial overvaluation of the naira, particularly since the mid-1970s. This implies that world price expressed in domestic currency has been underestimated in relation to the degree of overvaluation. Hence, any implicit tax on exports has been underestimated, whereas protection to imports has been overestimated. It is important to bear these deficiencies in mind when interpreting the price comparisons.

The ratios of domestic prices to international prices for selected agricultural crops in Nigeria for 1979-82 are presented in Table 5. The comparison can be made only for internationally traded commodities. Hence, crops such as yams, cassava, millet, and cowpeas, which are not internationally traded, have had to be excluded even though they are important components of the Nigerian food basket. Groundnuts and palm

Table 5—Ratios of domestic prices to international prices for selected agricultural crops, 1979-82

Commodity	1979	1980	1981	1982
Food crops				
Maize	1.13	1.35	1.99	2.40
Rice (paddy)	0.75	0.72	0.85	1.19
Sorghum	1.29	1.17	1.85	1.87
Food export crops				
Groundnuts	0.97	0.88	1.15	1.47
Palm oil	0.88	0.82	0.98	1.60
Export crops				
Cocoa	0.63	0.94	1.45	1.40
Rubber	1.00	0.79	1.31	1.18
Cotton	0.56	0.62	0.65	0.86
Palm kernel	1.03	1.00	1.31	1.78

Source: Derived from data in James W. Robertson, "An Analysis of Agricultural Trade and Subsidy Policies in Nigeria," Country Policy Department, World Bank, Washington, D.C., August 1983 (mimeographed).

Note: Domestic and international prices are made comparable by transforming international prices into their domestic currency equivalents, using the official exchange rate.

oil were important export crops during the 1960s, but are now largely used as food. However, if current policy to revive all exportables succeeds, they may again become important export crops.

An implicit tax or negative protection is implied in Table 5 whenever domestic price is below the external price and hence the ratio is less than unity. A ratio of domestic to international price that exceeds unity implies positive protection for domestic production of the crop. The table shows a mixed pattern of protection. Whereas it is obvious that the general level of protection has increased for the three groups of crops, it is not so clear that government's price intervention policies have made any distinction among the groups. Thus by 1982 rice and rubber appear to be equally protected. The same applies to sorghum and palm kernel. Maize stands out with an unusually high 140 percent protection rate.

Until 1980, the results indicate that export crops (except palm kernel) were implicitly taxed. The rate was particularly high for cotton; it is also the only export crop in this sample that remained implicitly taxed through 1982, though the rate declined from 1979. By 1982, all other export crops were protected as a result of administrative price interventions.

Groundnuts and palm oil were generally subject to varying degrees of implicit taxation through 1981, after which they received substantial protection. Among the food crops, only paddy rice was implicitly taxed between 1979 and 1981. Maize and sorghum enjoyed import protection throughout 1979-82.

The general pattern indicates that, from 1979 onward, government's agricultural price interventions have differed from the standard developing-country price posture, characterized by an implicit tax on export agriculture in general and implicit protection on import-competing agriculture (usually food crops). However, a note of caution should be entered here. As previously indicated, the estimated ratios in Table 5 were computed using the official naira exchange rate. Given the high rate of overvaluation of Nigerian currency since the early 1970s, the import protection rates are probably not really as high as those in the table. By the same token, the estimates of implicit taxation are probably higher.

Year-to-year variations in the level of exchange rate overvaluation and foreign price changes make it difficult to determine the exact degree of over- and underestimation in the implicit protection and tax rates. What seems clear, however, is that the general effect of the government's price intervention policies has been to raise the domestic prices of most of Nigeria's agricultural crops above their corresponding world prices so that varying degrees of import protection are provided for domestic production.

Intervention and Effective Protection

The combined effects of price intervention policies on the relative incentives to the major activities in the agricultural sector can also be assessed by comparing estimates of nominal and effective rates of protection for different crops.[39] The nominal rate measures the extent to which domestic prices diverge from world parity prices. It should, in principle, reflect a pattern similar to that revealed in Table 5 since the price variables being compared are essentially the same.

A clear upward trend in nominal rates of protection for all crops, both food and nonfood, is revealed in Table 6. It also shows that while most of the exportable crops (groundnuts, cocoa, and rubber) had negative nominal rates of protection in the earlier years, all had substantial nominal protection in 1981 and 1982. This confirms the pattern, shown in Table 5, that all crops were receiving protection from external competition by 1982.

A limitation of the nominal rate of protection is that although it measures the effects of price intervention for a sector's output prices, it ignores the input side. As a result, nominal rates of protection are not adequate measures of the effects of price interventions on both output and input markets. A more appropriate indicator is the effective rate of protection, which reflects subsidy to value added. Although it is a better measure of the amount of incentive to the domestic producer of a commodity, it does not take account of exchange rate overvaluation.

Estimates of effective rates of protection exhibit a clear upward trend (Table 7), in spite of wide variations for particular crops and over time. For exportable crops, this means that rates of effective protection or implicit taxation switched from negative in the 1960s and 1970s to positive in more recent times. It confirms the conventional developing-country pattern of positive and relatively high effective protection rates. Although the effective protection rates for maize, sorghum, and cocoa were particularly high in 1981 and 1982, it should also be noted that levels of protection for manufacturing and processing activities have been high and widely dispersed since the early 1960s when Nigeria adopted the import-substitution-industrialization strategy. On average, effective rates of protection for consumer goods range between 80 and 150 percent and those for intermediate and capital goods between 25 and 75 percent. Several outliners—goods under import license or otherwise subject to some form of quantitative import restriction—have effective protection rates of more than 200 percent. In spite of recent increases in their rates of protection, agricultural crops generally are relatively less protected than products of the manufacturing sector. Within the agricultural sector itself, export crops receive less protection than food crops.

Table 6—Nominal rates of protection for selected agricultural crops, 1979-82

Commodity	1979	1980	1981	1982
		(percent)		
Maize	61.2	94.8	188.3	245.4
Rice (paddy)	1.1	−4.4	13.2	59.0
Sorghum	84.9	66.9	137.9	195.2
Groundnuts	−0.9	−10.5	17.5	n.a.
Cocoa	−37.6	−7.7	32.8	26.0
Rubber	−49.3	−46.5	−2.1	14.2
Palm kernel	3.4	0.0	31.2	n.a.

Source: James W. Robertson, "An Analysis of Agricultural Trade and Subsidy Policies in Nigeria," Country Policy Department, World Bank, Washington, D.C., August 1983 (mimeographed).

Note: n.a. means not available.

Implications of Price Intervention

The above estimates clearly indicate that agricultural price interventions in Nigeria have increasingly protected domestic production of agricultural crops from external competition. For most of 1960-82, how-

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[39] The concepts of nominal and effective protection, as well as their uses and limitations, are extensively discussed in Balassa, *Structure of Protection in Developing Countries;* and William M. Corden, *The Theory of Protection* (Oxford: Clarendon Press, 1971).

Table 7—Effective rates of protection, selected agricultural crops, selected years, 1960-82

Commodity	1960-65	1965-70	1970-76	1979	1980	1981	1982
				(percent)			
Maize	−3	14	13	61	95	189	247
Rice	−20	23	35	1	−4	13	59
Sorghum	−3	14	13	86	67	190	197
Millet	−3	14	13	8	9	5	3
Yams	n.a.	n.a.	n.a.	1	1	1	0
Cassava	n.a.	n.a.	n.a.	1	1	0	1
Cowpeas	n.a.	n.a.	n.a.	4	4	2	2
Groundnuts	−40	−47	−53	−1	−11	18	n.a.
Palm oil	−56	−50	−29	n.a.	n.a.	n.a.	n.a.
Cocoa	−48	−60	−42	−31	22	138	114
Rubber	n.a.	n.a.	n.a.	−1	−23	34	n.a.
Cotton	−44	−42	−43	−21	−16	18	20

Sources: Data for the years 1960-76 are taken from Tshikala Tshibaka, "Effects of Nigerian Trade Policies on the Agricultural Sector, 1955/56-1975/76," Ph.D. thesis, University of Ibadan, 1979, p. 102. Data for the years 1979-82 are taken from James W. Robertson, "An Analysis of Agricultural Trade and Subsidy Policies in Nigeria," Country Policy Department, World Bank, Washington, D.C., August 1983 (mimeographed), p. 24.

Notes: n.a. means not available. Effective rates of protection are computed taking into account purchased inputs subject to import duties and sales taxes.

ever, this simply means that the rate of implicit taxation of agricultural export crops was decreasing. Export crops did not receive positive encouragement through protection until the 1980s. It can therefore be concluded that until fairly recently exportable crops able to compete successfully in the international market have been taxed, whereas import-competing crops—usually food—have received substantial protection, at least since the mid-1960s.

The treatment of agricultural export crops appears consistent with Nigeria's general development strategy and policy objectives before the oil boom of the mid-1970s. In most developing countries since the late 1950s export crop marketing boards have been used more as government revenue-gathering agencies than as a means of enhancing domestic production or protecting farmers' income. This was particularly true in Nigeria during the 1960s. But as government received more revenue from the oil sector from 1974 onward, the need to finance government services by squeezing the agricultural sector abated. At the same time, the critical importance of agriculture to economic development began to be more widely recognized. This was spurred, no doubt, by rising food import volumes and falling agricultural export earnings.

It is doubtful whether the substantial protection of food crops since the mid-1960s has occurred as a result of policy choice or as a by-product of other macroeconomic considerations. Quantitative import restrictions have been the most significant influence on nominal protection, especially for food crops. Guaranteed minimum prices have had no discernible effect on domestic prices because they have generally been much lower than prevailing market prices. Input subsidies, although substantial, have not had much impact on the large majority of Nigeria's farmers, who continue to rely primarily on traditional production techniques.

Quantitative import restrictions on food crops tend to be used largely for dealing with short-term balance-of-payments adjustment problems. It is usual to have a long list of commodities placed under specific import license requirements or complete ban whenever Nigeria's foreign reserve is under pressure. When this happens, it is reflected in large positive rates of protection for the commodities concerned. Because of the way they are used, quantitative import restrictions unfortunately involve short-term fluctuations in size and sometimes direction of production incentives. The result is that protection for food crops often does not indicate stability and consistency in policy intentions. Hence, apparently large production incentives do not necessarily result in positive and sustained supply response.

6

AGRICULTURE AND THE DUTCH DISEASE

The rapid expansion of the oil sector since the early 1970s has led to sectoral changes and reallocation of factors of production among different economic activities. A resource boom of this nature influences the sectoral structure of the economy largely through changes in relative prices.[40]

Models of the Dutch Disease phenomenon have been analyzed to identify basic hypotheses relating to the effects of a resource boom, particularly on the relative size of sectors, sectoral prices, the wage rate, and the real exchange rate. These hypotheses have been examined in the light of the structural changes in the Nigerian economy between 1979 and 1982 to determine the effects of the oil boom on output and prices of agricultural export crops and import-competing food crops.

Effects of a Resource Boom

The rapid expansion of the resource sector in a resource-exporting country affects the overall economy through a network of interactions. The resource sector uses factors, particularly labor and capital, which, if not brought in from abroad, must be withdrawn from other sectors of the economy. Expansion of the resource sector creates additional income, which generates expenditures. The effects of these expenditures depend on the types of goods on which the increased income is spent. The resulting spending pattern affects demand and supply conditions in the product market. The sector's withdrawal of factors also impinges on the economy's factor markets. Thus expansion of the resource affects not only relative product prices but also factor prices and the exchange rate. The effect on the exchange rate occurs because exports of the expanding resource generate an inflow of capital, the spending of which affects the real exchange rate. Over the long run, a booming resource sector leads to changes in the sectoral structure of the overall economy.

Several models have been developed to capture, in a more formal sense, the basic ideas and hypotheses sketched above. A typical model of this type is based on the standard assumptions of a small, open economy producing three kinds of goods: importables, exportables, and nontradables. The world prices of the importables and exportables are exogenously given, whereas the prices of (nontraded) domestic goods are determined by domestic demand and supply factors. One of the two traded goods sectors is taken as the resource sector, and the other represents traditional food and agricultural products, as well as import-competing manufacturing products.

In general, a booming resource sector influences the rest of the economy through the spending and resource-movement mechanisms. Each is a distinct channel for the effects and can be shown separately using simple versions of the basic Dutch Disease model.

The Spending Mechanism

The spending mechanism is best illustrated by a model that treats the resource sector only as an exporter having no supply-side links with the rest of the economy. As before, the rest of the economy consists of two sectors, the traded and the nontraded. The nominal sector prices are P_R for the resource sector, P_t for the traded sector, and P_n for the nontraded goods sector. Because world prices of traded goods are exogenously determined, the ratio P_R/P_t is treated as given.

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[40] This section relies heavily on the growing body of literature on the "Dutch Disease" phenomenon, which takes its name from the effects of a boom in natural gas on the economy of the Netherlands. Contributions to the literature include: R. G. Gregory, "Some Implications of the Growth of the Mineral Sector," *Australian Journal of Agricultural Economics* 20 (1976): 71-91; William M. Corden and P. Neary, "Booming Sector and De-Industrialization in a Small Open Economy," *Economic Journal* 92 (1982): 825-848; A. C. Harberger, "Dutch Disease: How Much Sickness, How Much Boom?," *Resources and Energy* 5 (No. 1, 1983); and H. Siebert, ed., *The Resource Sector in an Open Economy* (Berlin: Springer-Verlag, 1984).

The aggregate output of all traded goods sectors (Q_T) consists of the output of the resource sector (Q_R) and the remaining traded goods sector (Q_t):

$$Q_T = Q_t + (P_R/P_t)\, Q_R. \qquad (1)$$

The economy's total output (Q) is given by

$$Q = Q_T + Q_n, \qquad (2)$$

where Q_n represents the output of the nontraded goods sector.

The economy's production possibility frontier is assumed to have the usual concave shape so that at least one factor (presumably labor) can move between the domestic traded and nontraded goods sectors (Figure 4). The resource boom is reflected by the movement of the transformation curve from n't' to n"t". Following this shift, the equilibrium production point moves from P to P', reflecting the existing price ratio between nontraded and traded goods (P_n/P_t). But, if all income is spent and nontradables are not inferior goods, the new consumption point C will be to the right and below P', given the concave shape of the transformation curve. In this situation there would be an excess demand for nontraded goods that could only be eliminated by an increase in the relative price of nontraded to traded goods (P_n/P_t). This relative price change would cause an increase in the output of nontraded goods and a corresponding reduction in the output of the domestic traded goods sector (a movement from T to T' in Figure 4).

In this simple version of the Dutch Disease, the resource boom reflects an increase in foreign resources received. The booming export sector does not use domestic factors of production but generates an increase in income. As this additional income is spent on both traded and nontraded goods, relative prices change. The excess demand for nontraded goods forces up the relative price in favor of nontraded goods, whereas the increased demand for traded goods is met by increased imports. The result is that the expansion of the nontraded sector is achieved at the expense of the traded sector; factors of production are diverted from the traded sector whose output also declines.

The Resource Movement Mechanism

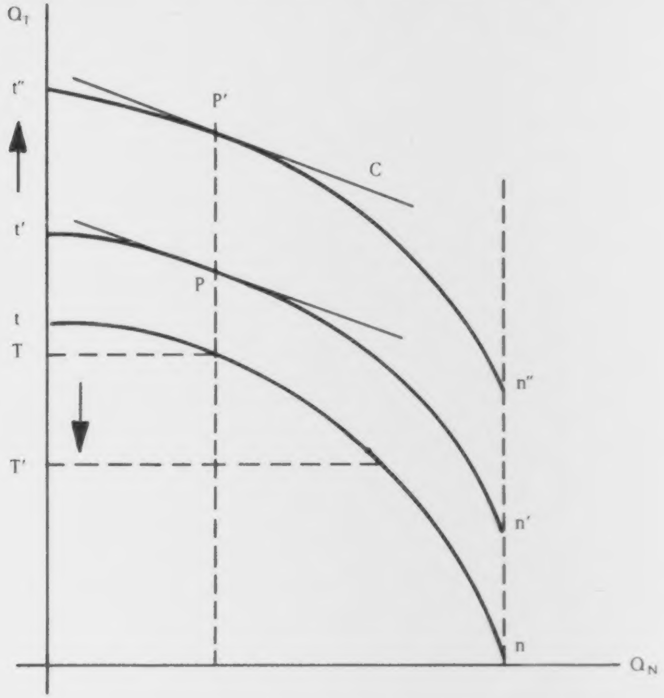
If the resource sector is not an export enclave, it can also interact with the rest of the economy on the supply side. Assuming that capital is sector-specific, this means that in the short run labor is the only mobile factor of production. The production function for each of the three sectors is characterized by diminishing marginal products. In each sector therefore, the marginal product of labor is a decreasing function of the labor input. A transformation curve, similar to that in Figure 4, can be constructed. Its slope indicates the opportunity cost of nontraded goods in terms of traded goods.

A boom in the resource sector can, through its effect on income, cause the demand curve for the nontraded goods sector to shift upward. This puts upward pressure on the P_n/P_t ratio, which in turn induces a rightward shift in the supply curve of nontradable goods. Thus, both the booming resource sector and the nontradable sector demand more labor. Because the total supply of labor in the economy is fixed, the required labor is drawn from the tradable sector. The wage rate in the traditional tradable sector is forced up as labor moves to the two other sectors.

Total Effect

The total impact of a resource boom is a combination of several effects. The magnitude of each may vary depending on the intersectoral substitution relationships in both production and consumption. For in-

Figure 4—Spending effect of a resource boom



stance, the movement of resources as the result of the boom causes the price received by the traditional export goods sector to fall relative to the price of domestic goods, and the domestic output of this sector is reduced. In the same way, the relative price of importables falls and the size of import-competing goods diminishes. However, the nontradables sector is not homogeneous, and some of these goods may have elasticities of substitution (in consumption) with import-competing or exportable goods that are quite high. In such cases, a resource boom may be expected to reduce the output of those nontraded goods for which imports are close substitutes, all else being equal.

In some cases, the total effect of a resource boom can be ambiguous. One example is the combined effect of spending and the resource movement on the output of domestic goods. On the one hand, the spending effect raises the relative price of home goods and hence induces an increase in the output of these goods. On the other hand, the resource movement effect could reduce the output of home goods. When both mechanisms are effective simultaneously the total impact cannot be determined a priori, and it becomes an empirical issue. In general, however, it seems clear that a boom in an export sector affects the import-competing sector in much the same way as a tariff reduction. It creates or increases domestic production disincentives (or reduces existing domestic production incentives) through unfavorable relative price changes. In comparison, the boom affects the traditional export sector (that is, agriculture) as an export tax increase. It changes the terms of trade so that they are unfavorable for domestic production of agricultural exports by reducing their domestic relative prices.

Some Dynamics

The above analysis focuses on the long-run effects of a resource boom on the competitiveness of the rest of the economy. The introduction of a monetary sector adds dynamic considerations to these results.

If money is added to the system described above, a resource boom will also affect its supply and demand. In the first place, once the resource sector produces exports, it earns foreign exchange. A boom in that sector will generate a balance-of-payments surplus if it is assumed that an external payments balance existed prior to the boom. When the Central Bank monetizes this balance-of-payments surplus, money supply increases. Second, the increase in income brought about by the boom will lead to an increase in the demand for money because the demand for money is normally positively related to the level of income. Thus the two tendencies could lead to an excess supply of money or an excess demand for it. An excess supply of money implies (by Walras' law) an excess demand for both tradable and nontradable goods—a situation that creates inflationary pressures and depresses the relative price of tradables further. An excess demand for money would have the opposite effect. It is clear that a boom in an export resource can generate a balance-of-payments surplus, and that if this is monetized, there would be an increase in the supply of money as well as inflation. An increase in the general price level that is not matched by an equivalent devaluation would generate a real appreciation of the domestic currency. This appreciation would, in turn, squeeze profitability out of the traditional export and import-competing sectors of the economy.

In summary, the general effects of a resource boom on the traditional export goods sector (in this case agriculture) and the import-competing goods sector (manufacturing) include loss of competitiveness in both exportable and importable goods sectors as revealed by falling relative prices; loss of relative shares (of total output and employment) by the exportable and import-competing sectors; an upward trend in the real wage rate in the tradable goods sector; an upward trend in the general price level; and currency appreciation. The adjustment of the Nigerian economy to the rapid expansion of its oil sector during the 1970s is analyzed below.

Consequences of the Nigerian Oil Boom

It is generally recognized that the oil boom that accompanied large increases in worldwide petroleum oil prices in 1973/74 and again in 1979/80 has significantly transformed the structure of the Nigerian economy. This transformation is indicated, indirectly, in the growth rates of various sectors since 1960.

The dominance of the oil and minerals sector in the Nigerian economy is demonstrated most clearly, however, by an examination of the structure of merchandise exports, particularly because the external sector is so important in the economy. The share of oil and minerals rose sharply from 8 percent in 1960 to 95 percent in 1981. Agriculture's share dropped from 89 percent in 1960 to 4 percent in 1981. By 1981, oil contributed more than 70 percent of total government revenue.

The Dutch Disease model provides an appropriate handle for analyzing the consequences of structural changes in the economy brought about by the oil boom. This is done by relating the general predictions of the model to the Nigerian experience. The predictions of particular concern in this exercise include the relative loss of output and employment as well as competitiveness by the nonoil tradable goods sectors. Also relevant are the evolution and trends of the exchange rate, real wage rate, and the general price level, all of which are related to the issue of relative sectoral competitiveness in the economy.

Effects on Sectoral Output and Employment

Structural changes in the economy brought about by the oil boom have implications for sectoral output and employment (Table 8). As the Dutch Disease model predicts, the boom in the oil sector adversely

Table 8—Changes in sectoral contributions to output, employment, and exports, 1970 and 1982

Sector	Share of Output		Share of Employment		Share of Exports	
	1970	1982	1970	1982	1970	1982
	(percent)					
Agriculture	48.78	22.19	75.00	59.00	71.90	2.40
Oil and mining	10.22	24.87	0.20	0.40	15.40	97.50
Manufacturing	7.15	5.64	15.00	17.70	12.70	0.10
Services	33.85	47.30	9.80	22.90	. . .	. . .

Sources: Computations are based on data from Nigeria, Federal Office of Statistics, *National Accounts of Nigeria* (Lagos: FOS, Nigeria, 1978); and Nigeria, Federal Office of Statistics, *Economic and Social Statistics Bulletin* (Special Series), January 1984.

affected output of nonoil tradables. Thus, agriculture's contribution to total output declined from about 49 percent in 1970 to 22 percent in 1982. The share of manufacturing fell much less, from 7 percent to nearly 6 percent. But oil's share more than doubled—from 10 percent in 1970 to almost 25 percent in 1982. The service sector gained—as predicted—from the boom, with its relative share of output rising from about 34 percent to 47 percent during the same period.

Changes in sectoral employment exhibited a slightly different pattern. Whereas agriculture's relative contribution to total employment declined, as expected, from 75 percent to 59 percent, the relative share of manufacturing actually increased slightly in spite of the significant decline in this sector's relative contribution to total output. In comparison, the booming oil sector doubled its share of employment, although it still represented less than 1 percent of employment. Services increased its share more than twofold. Relative gains recorded in both of these sectors are consistent with the predictions of the Dutch Disease model.

Changes in the structure of exports most dramatically reflect the impact of the oil boom. As Table 8 shows, agriculture's share of total exports fell sharply from about 72 percent to less than 3 percent, whereas the share of manufactures declined from 13 percent to less than 1 percent. Correspondingly, the share of the oil and mining sector rose from 15 percent to 98 percent.

These changes in sectoral output and employment reflect intersectoral resource shifts in the Nigerian economy, largely in response to the incentive or disincentive effects of relative price changes. The use of a simple model designed for analyzing structural shifts would assist in providing further insights into the effects of the intersectoral movement of resources.[41] This model examines structural changes within a specified period. Suppose that, at the beginning of this period, the value of agricultural output is related to the gross domestic product (GDP) during the time interval so that agriculture (AS_1) contributes b_1 percent of GDP_1. Then, at the end of the period, the value of agricultural output ought, hypothetically, to be $AS^1_2 = b_1$ percent of GDP_2 if no structural change has occurred during the period, and GDP_2 represents the end-of-the-period value of the GDP. But if any structural change has taken place, the actual value of agricultural output at the end of the period (AS_2) will be different from its hypothetical value (AS^1_2). In fact the total (actual) change (TC) in the value of agricultural output can be decomposed into two component parts:

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[41] A similar model is developed and applied in E. C. Edozien and T. Ademola Oyejide, "Import Restrictions in Nigeria and Their Impact on Imports from Japan," *Nigerian Journal of Economic and Social Studies* 15 (July 1973): 157-170.

$$TC = AS_2 - AS_1 = (AS_2 - AS_2^1) + (AS_2^1 - AS_1), \quad (3)$$

with the structural shift effect (SSE) equal to $(AS_2 - AS_2^1)$, and the overall economic growth effect (EGE) equal to $(AS_2^1 - AS_1)$. In essence, SSE can be identified as the change in a particular sector's share of total GDP that may result from shifts in the distribution of that GDP between the different sectors that contribute to it. EGE, in comparison, reflects the impact on a particular sector of changes in the overall size of the GDP. Thus, given a constant relative sectoral share, particular sectoral (absolute) values may increase or decrease as a result of general expansion or contraction of the GDP. Total change for a given sector is made up of these two parts.

In this scheme, the effect of incentives or disincentives of relative price changes (whether autonomous or policy-induced) are assumed to be captured by the SSE, whereas EGE takes care of the possible expansion or contraction of sectoral output values emanating from a general increase or decline of the GDP during the period. The decomposition achieved by this simple model is obviously not as satisfactory as one would wish. Its implicit reliance on a "normal" growth pattern that assumed proportional growth rates in each sector implies that its application in a situation where sectoral growth rates are known to be uneven poses some problems.[42] But it does produce a general indication of the direction and effects of sectoral shifts even where growth is nonproportional, for example, an economy in which a booming sector coexists with other stagnant or declining sectors.

A crude measure of the effects of structural changes is derived by computing the hypothetical sectoral output values for 1982, using the sectoral 1970 percentage output shares, which are then compared with the actual 1982 sectoral output values. The result shows sectoral gains and losses in values and percentages (Table 9). This table reveals that both agriculture and manufacturing suffered significant losses as a result of these shifts. The agricultural sector absorbed a relative loss of almost 55 percent, while the manufacturing industry sustained a loss of 21 percent. Corresponding to these losses are the substantial gains by the booming oil and mining sector and the services sector. The output of the oil and mining sector increased by about 143 percent over and above its normal growth projection, and the services sector increased about 40 percent. Similarly, Table 10 shows that the impact of sectoral shifts on exports is reflected in large relative losses for agriculture and manufactures. It is fairly clear from these figures that the nonoil tradables,

Table 9—Effects of sectoral shifts on output, 1970-82

Sector	1970 Actual	1982 Actual	1982 Hypothetical	Gain or Loss	Percent of Gain or Loss
			(₦ million)		
Agriculture	1,731.3	10,410.3	22,888.1	−12,477.8	−54.5
Oil and mining	362.7	11,670.7	4,795.3	6,875.4	143.4
Manufacturing	253.8	2,647.5	3,354.9	−707.4	−21.1
Services	1,201.4	22,192.5	15,882.7	6,309.7	39.7
Total GDP	3,549.3	46,921.0	46,921.0	. . .	. . .

Sources: Computations are based on data from Nigeria, Federal Office of Statistics, *National Accounts of Nigeria* (Lagos: FOS, Nigeria, 1978); and Nigeria, Federal Office of Statistics, *Economic and Social Statistics Bulletin* (Special Series), January 1984.

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[42] For a similar idea, see H. B. Chenery, "Patterns of Industrial Growth," *American Economic Review* (September 1960).

Table 10—Effects of sectoral shifts on exports, 1970-82

Sector	1970 Actual	1982 Actual	1982 Hypothetical	Gain or Loss	Percent of Gain or Loss
			(₦ million)		
Agriculture	238	198.6	5,900.4	-5,701.8	-96.6
Oil and mining	51	8,003.2	1,263.8	6,739.4	533.3
Manufacturing	42	4.6	1,042.2	-1,037.6	-99.6
Total exports	331	8,206.4	8,206.4	. . .	. . .

Sources: Computations are based on data from Nigeria, Federal Office of Statistics, *National Accounts of Nigeria* (Lagos: FOS, Nigeria, 1978); and Nigeria, Federal Office of Statistics, *Economic and Social Statistics Bulletin* (Special Series), January 1984.

particularly agriculture, bore the brunt of the sectoral shifts caused by the oil boom.

Sectoral shifts had similar effects on employment (Table 11). Agriculture suffered a loss of more than 5 million workers or 27 percent, while the services sector gained more than 4 million or 57 percent. Although employment doubled in the booming oil and mining sector, it is not a labor-intensive sector and therefore the impact of this gain was negligible. Manufacturing, which suffered an output loss (Table 9), managed a 15 percent gain in employment.

Shifts among resource sectors bring changes in sectoral output and employment that can be decomposed into structural shifts and economic growth effects. Table 12 presents output data on both components. Although both agriculture and manufacturing suffered large structural shift losses, these were more than compensated for by gains from the economic growth effect. For the oil and mining and the services sectors, the gains derived from both components were cumulative. The services sector accounted for more than 48 percent of the total increase in output, well above the 26 percent share of the booming sector, which was just higher than that of the agricultural sector.

Total change in employment over 1970-82 can also be decomposed by sector (Table 13). The relative loss in the agricultural sector traceable to structural shifts is compensated for by gains through the economic growth effect so that the sector records a small increase in employment. Thus, agriculture had a relative, but not absolute, fall in employment.

As in the case of output, the major overall gainer from changes in employment was the services sector. This sector accounted

Table 11—Effects of sectoral shifts on employment, 1970-82

Sector	1970 Actual	1982 Actual	1982 Hypothetical	Gain or Loss	Percent of Gain or Loss
			(million)		
Agriculture	19.93	20.060	25.500	-5.440	-27.12
Oil and mining	0.05	0.136	0.068	0.068	100.00
Manufacturing	3.99	6.018	5.100	0.918	15.25
Services	2.60	7.786	3.332	4.454	57.21
Total employment	26.57	34.000	34.000	. . .	. . .

Sources: Computations are based on data from Nigeria, Federal Office of Statistics, *National Accounts of Nigeria* (Lagos: FOS, Nigeria, 1978); and Nigeria, Federal Office of Statistics, *Economic and Social Statistics Bulletin* (Special Series), January 1984.

Table 12—Components of sectoral shifts in output of the Nigerian economy, 1970-82

Sector	Components of the Sectoral Shift Structural Shift Effect	Economic Growth Effect	Total Change	Percent of Change
		(₦ million)		
Agriculture	−12,477.8	21,156.8	8,679.0	20.0
Oil and mining	6,875.4	4,432.6	11,308.0	26.1
Manufacturing	−707.4	3,101.1	2,393.7	5.5
Services	6,309.8	14,681.1	20,991.1	48.4

Sources: Derived from Tables 8 and 9.

Table 13—Components of sectoral shifts of employment in the Nigerian economy, 1970-82

Sector	Components of the Sectoral Shift Structural Shift Effect	Economic Growth Effect	Total Change	Percent of Change
		(million)		
Agriculture	−5.440	5.570	0.130	1.7
Oil and mining	0.068	0.018	0.086	1.2
Manufacturing	0.918	1.110	2.028	27.3
Services	4.454	0.732	5.186	69.8

Sources: Derived from Tables 8 and 11.

for about 70 percent of the increase in total employment compared with just over 27 percent for the manufacturing sector. This analysis thus supports the general proposition that both agriculture and manufacturing tend to suffer a decline in relative shares of total output and employment when a resource boom occurs. In Nigeria, however, the general economic expansion brought about by the oil boom also ensured that the nonoil tradables sectors were spared absolute losses in total output and employment.

Effects on Sectoral Competitiveness

An analysis of trends in external and internal relative sectoral prices reveals the general pattern of competitiveness in the economy. Starting with the external sector, the external prices of aggregate exports and cocoa exports are deflated by an index of international prices to produce indexes of real export prices (Table 14).

Table 14—Real prices of exports and terms of trade, 1970-82

Year	Aggregate Exports	Cocoa Exports	Terms of Trade
		(1970 = 100)	
1970	100.0	100.0	100.0
1971	126.5	69.4	130.5
1972	123.9	54.8	128.5
1973	149.7	52.9	152.1
1974	337.7	69.2	341.1
1975	313.7	64.9	327.0
1976	334.5	69.6	350.5
1977	347.2	121.3	363.0
1978	284.9	122.3	313.3
1979	388.8	103.1	400.9
1980	596.7	59.6	605.6
1981	679.1	65.2	685.7
1982	n.a.	63.2	n.a.

Sources: Unit export values for aggregate exports and cocoa are taken from the International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, various years). They are deflated by the composite consumer price index obtained from Nigeria, Federal Office of Statistics, *Economic and Social Statistics Bulletin* (Special Series), January 1984.

The terms of trade improved consistently and substantially during the 1970-81 period. But significant upward movements in the real aggregate export price index, particularly in 1974 and then again in 1979, reflect the upsurge in world oil prices. The price index for cocoa is more relevant. This index shows that the real prices of Nigeria's agricultural exports were depressed from 1970 to 1982 except for 1977-79. Internal price policy developments shown in Table 4 appear not to have adequately compensated for the significant downward trend in real prices of both agricultural export crops and food crops.

Factors contributing to the loss of competitiveness include changes in the rural wage and real exchange rates (Table 15). The nominal rate of exchange declined until 1980, except for 1977 and 1978, and then rose through 1982. The real exchange rate declined through 1970-82 except for 1973. This means that the naira generally appreciated in terms of its external value. Combined with this was a threefold increase in the estimated real rural wage rate. Thus a substantial inflationary pressure strengthened the appreciation of the real exchange rate and, together with a labor cost squeeze, led to a significant loss of competitiveness by the nonoil tradables, particularly agriculture. The adverse effects on agricultural prices of changes in income, inflation, and exchange rates from the oil boom do not appear to have been adequately compensated for through government intervention.

Table 15—Exchange and rural wage rates, 1970-82

Year	Nominal Exchange Rate Index[a]	Real Exchange Rate Index[b]	Real Rural Wage Rate Index[c]	Consumer Price Index
		(1970 = 100)		
1970	100.0	100.0	100	100
1971	100.0	83.6	153	116
1972	93.0	65.3	213	119
1973	93.0	114.2	260	127
1974	88.7	77.0	283	144
1975	87.3	52.0	300	161
1976	88.7	64.7	283	198
1977	90.0	84.6	276	231
1978	91.5	74.9	265	269
1979	84.5	68.0	289	300
1980	77.5	74.2	271	331
1981	83.0	62.7	233	400
1982	103.3	70.9	232	431

[a] The nominal exchange rate is the naira price of the U.S. dollar.

[b] The real exchange rate is computed as the nominal exchange rate multiplied by an index of trade-weighted foreign prices of tradables divided by the consumer price index.

[c] The rural wage rate index is taken from Table 1.

7

EFFECTS OF TRADE AND EXCHANGE RATE POLICIES

The poor performance of Nigerian agriculture since the 1970s has evoked various policy responses. Some have taken the form of direct government intervention in agriculture with the aim of influencing the structure of incentives. They include sector-specific infrastructural investments as well as administrative price fixing in agricultural input and output markets. Other more general macroeconomic policies also have direct and indirect incentive effects on agriculture. These policies, particularly trade and exchange rate policy measures, either reinforce or counteract those directed solely at agriculture.

The Real Exchange Rate and Agriculture

General macroeconomic management policies impinge on agriculture through changes in the real rate of exchange, which plays a critical role in the profitability of both export-oriented and import-competing agriculture. The real rate of exchange measures the real terms of trade between traded and nontraded goods. This rate can be measured in a number of ways. One is the internal price level of tradable goods divided by that of nontradable goods. Another is the nominal exchange rate multiplied by a foreign price index and divided by an internal price index. A third measure is the ratio of the nominal exchange rate to an index of the internal wage rate. In both the second and third measures, the nominal exchange rate is the predominant internal variable in determining the domestic prices of tradables, whereas the wage rate is the primary input into services, which constitute the bulk of nontradables. The first and second measures also approximate each other to the extent that the foreign price index captures the foreign price levels of the country's imported and exported goods, and the domestic price index captures the internal price level of nontraded goods.

For the following analysis, it is convenient to think of the real exchange rate as the ratio of the prices of tradable goods to the prices of nontradables. A fall in the real exchange rate implies that the prices of tradable goods are falling relative to the prices of nontradables. On the other hand, an increase means that the price ratio improves in favor of tradable goods. If the reasonable assumption is made that intersectoral resource flows are sensitive to relative price changes, it is clear that changes in the real rate of exchange would tend to affect intersectoral profitability, which would induce movement of resources between different sectors of the economy. More specifically, a reduction in the real exchange rate would tend to divert resources away from tradables to nontradables, while an increase would accomplish the opposite.

Changes in the terms of trade between tradables and nontradables (or the real rate of exchange) are determined by, among other variables, trade policy and foreign prices. In this case, trade policy refers to changes in import tariffs and export taxes. Domestic trade policy operates largely by creating a wedge between domestic and foreign prices. If an import tariff is imposed, domestic prices of importables will rise above corresponding foreign prices, whereas an export tax reduces domestic prices of exportables relative to foreign prices. The latter change reduces incentives for the domestic production of exportable goods while inducing an increase in domestic demand. This results in reduced exports and a shift of resources away from the exportable sector. If these resources flow into the production of nontradables, the excess supply pressure leads to a decline in their prices. A fall in the price of nontradables relative to the price of tradables implies an increase in the real rate of exchange. Thus, an increase in the export tax tends to cause an increase in the real rate of exchange, all other things being equal.

Because an increase in import tariffs enables the domestic price of importables to rise above the corresponding foreign price, it increases incentives for their domestic production while reducing their domestic demand. This induces resource movement in favor of importables and away from nontradables. Output of nontradables is reduced and an excess demand exerts upward pressure on their price. When the price of nontradable goods increases relative to the price of tradable goods, the real rate of exchange declines. All things being equal, an increase in import tariffs translates into a fall in the real rate of exchange.

In general, a decline of the real exchange rate is a signal that the terms of trade have worsened against the tradable goods sector and that resources are being diverted to the nontradable goods sector. An increase in the real rate gives an opposite signal. The export crops and import-competing products are tradables, although agriculture also produces nontraded food crops. For this sector, therefore, a decline in the real rate of exchange indicates a reduction in the relative prices of traditional agricultural exports and import-competing products of agriculture. But unlike the manufacturing sector, agriculture is usually not shielded against the impact of the relative price changes implicit in a falling real rate of exchange.

Nigeria's import-substitution-industrialization strategy implies an inward-looking trade regime, which confers substantial protection on import-competing manufacturing activities.[43] This strategy is sustained by a set of high import tariffs, which affect agriculture in a number of ways. First, import tariffs also tax exports and therefore hurt agricultural exports. Second, a policy that protects industry raises the cost of imported agricultural inputs such as machinery, fertilizer, and other chemical inputs. Third, and more pervasive, is the effect of industrial protection on the real rate of exchange. The real exchange rate that maintains external balance at a given rate of industrial protection is lower than the equilibrium real rate that would prevail because an increase in import tariffs corresponds, all things being equal, to a decline of the real rate. Hence, a given level of protection to industry reduces the domestic prices of tradables produced in agriculture relative to the domestic prices of tradables produced in the industrial sector and the prices of nontradable goods. Such relative output price changes also have incentive effects in the factor market. To the extent that the relative price changes encourage increased domestic production of import-competing industrial tradables, incentives are created for labor and other inputs to move out of agriculture into the industrial and nontraded goods sectors.

The labor market provides a particularly critical link between the real exchange rate and agriculture. Declines in the relative price of agricultural output resulting from declines in the real exchange rate are significant whether brought about by the Dutch Disease (as discussed in Chapter 6) or by the protection of industry, or a combination of both, as is the case in Nigeria. The labor market provides the second component of the general squeeze on agriculture resulting from a decline in the real rate of exchange.

Because Nigerian agriculture is labor intensive, the major constraint on production appears to be rural labor shortages, especially during peak periods. Labor is also the main input in the nontradables sector, which includes government, public works, construction, and other services. If the real exchange rate declines so that increased income from expanded oil revenue or more rapid capital inflow is spent on nontradables, and if a certain level of protection is provided for the import-competing manufacturing activities, the result will be more favorable terms of trade for nontradables and the protected industrial tradables. Consequently, labor is induced to move out of agriculture. Since the labor supply is finite, that available to agriculture is reduced in relation to its demand, which puts upward pressure on the rural wage rate. This is likely to result in substantial increases in labor costs, which already are a large proportion of total agricultural production costs in Nigeria. A fall in relative output prices and higher relative prices of labor and other agricultural inputs has the effect of reducing the profitability of producing tradable (export and import-competing) goods in agriculture.

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[43] Nigeria's system of industrial incentives is analyzed in T. Ademola Oyejide, *Tariff Policy and Industrialization in Nigeria* (Ibadan, Nigeria: Ibadan University Press, 1975); J. W. Robertson, *The Structure of Industrial Incentives in Nigeria: 1979-80,* Report 1441-01 (Washington, D.C.: World Bank, 1981); and T. J. Bertrand and J. W. Robertson, *An Analysis of Industrial Incentives and Location in Nigeria* (Washington, D.C.: World Bank, 1978).

Incidence of Trade and Exchange Rate Policies

The following analysis is based on the postulate that trade and exchange rate policies influence the economy's level and structure of production incentives and that these determine the intra- and intersectoral flow of resources. It is the belief in the potency of production incentives for moving resources between different economic activities that motivated the various price intervention measures discussed in previous parts of this report, particularly Chapter 5.

Until recently, previous studies of incentive systems and corresponding resource flows in the developing countries have concentrated largely on the degree of protection for competing manufacturing activities by trade and exchange rate policies.[44] Although most of these studies did not deal explicitly with the agricultural sector, their conclusions indicate, in general, that prevailing industrial protection policies in the developing countries tend to have adverse, though not necessarily intended, effects on agriculture, particularly its export component. The partial equilibrium approach taken by such studies may have contributed to what seems to be a general underestimation of the adverse effects on agriculture of industrial protection policies, which favored import-competing industrial activities at the expense of the other sectors.

Analytical Model

Recent theoretical and methodological advances concerning the effects of general trade and exchange rate changes, typified by the work of Dornbusch and Sjaastad, have established that trade and exchange rate policies often have global economywide repercussions substantially different from that intended by policymakers.[45] The effects on agriculture can be quite strong even when such policies are not directed specifically at the sector.

The analytical model that reflects these new developments is that of a simple open economy producing three types of goods—exportables, importables, and home (nontraded) goods. The domestic nominal prices of the tradable goods are determined by their foreign prices, the nominal exchange rate, import duties, and export taxes or subsidies. The domestic nominal prices of nontraded goods are determined by domestic demand and supply factors, which are, in turn, influenced by trade and exchange rate policies through the tradable goods markets.

In this model trade and exchange rate policies are viewed not in terms of their effect on nominal prices but of their impact on relative prices. Import duties and export taxes (or subsidies) affect the structure of domestic prices of importables and exportables relative to the price of nontradable (home) goods. The consequent changes in relative prices are accompanied by complex and pervasive substitution processes in production and consumption, which constitute the real effects of a given set of trade and exchange rate policy changes on intra- and intersectoral resource flows. The analytical framework provides a methodology for isolating and quantifying the sectoral effects of any combination of import tariffs, export taxes, or subsidies in a given trade and exchange rate regime.

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[44] Among the most important of these studies are Balassa, *The Structure of Protection in Developing Countries;* I. M. D. Little, et al., *Industry and Trade in Developing Countries* (Oxford: Oxford University Press, 1970); Anne O. Krueger, et al., eds., *Trade and Employment in Developing Countries* (Chicago: University of Chicago Press for the National Bureau of Economic Research, 1981).

[45] Rudiger Dornbusch, "Tariffs and Nontraded Goods," *Journal of International Economics* 4 (1974): 177-185; and Larry A. Sjaastad, "Commercial Policy, True Tariffs, and Relative Prices," in *Current Issues in Commercial Policy and Diplomacy,* ed. J. Black and B. Hindley (New York: St. Martin Press, 1980).

Trade and exchange rate policy variables enter the model through the assumption that excess demand for importables (M^e), excess supply of exportables (X^e), and excess demand for home goods (H^e) depend only on relative prices (P_m/P_h; P_x/P_h) and real income (Y), where P_m, P_x, and P_h represent the domestic nominal prices of importables, exportables, and home goods, respectively. The domestic relative prices are, in turn, expressed as functions of foreign prices of exportables (P_{x^*}) and importables (P_{m^*}), the nominal rate of exchange (E), import tariffs (t), and export subsidies (s). The following relationships hold:

$$P_m/P_h = (E/P_h)P_{m^*}(1 + t), \qquad (4)$$

$$P_x/P_h = (E/P_h)P_{x^*}(1 + s), \text{ and} \qquad (5)$$

$$P_m/P_x = P_{m^*}/P_x(1 + t)/(1 + s). \qquad (6)$$

Equation (6) implies that the domestic price of importables relative to the price of exportables is a function of trade policy variables and foreign prices. The imposition of an import tariff raises the domestic nominal price of importables relative to those of exportables and home goods [equations (4) and (6)]. This change in relative prices induces consumers to shift demand away from importables to exportables and home goods. It also induces increased domestic production of import-competing importables. In other words, resources are induced to move away from both exportables and home goods toward importables. In the home goods sector, these processes create a reduction in supply and an increase in demand. The resulting excess demand places an upward pressure on prices until they reach a new supply and demand equilibrium. This position is such that the import tariff has increased the domestic price of importables relative to the price of home goods, but by less than the full amount of the tariff because the nominal price of home goods has also risen somewhat.

To formalize these relationships, all goods can be defined so that their domestic prices are unity with no trade restrictions. If the world prices of importables and exportables are assumed to be constant, the imposition of import duties with a weighted average t and export subsidies whose weighted average is s will set in motion relative price changes and substitution effects. The import duties will cause an increase in the price of importables and a fall in the price of exportables—both relative to the price of home goods. The export subsidies will, in turn, increase the price of exportables and decrease the price of importables—both relative to the price of home goods. In particular, if import duties are larger than export subsidies ($t>s$), the equilibrium price of home goods will rise by an amount that is less than t but greater than s. If d represents the increase in the price of home goods, Sjaastad shows that[46]

$$d = s + \omega(t - s) = \omega t + t(1 - \omega)s, \qquad (7)$$

where ω represents an incidence parameter, which, as will be shown later, consists essentially of parameters measuring substitution relationships.

The nominal distortion introduced into the economy by trade policy is measured as the difference $(t - s)$, which decomposes into two terms,

$$t - s = (t - d) + (d - s), \qquad (8)$$

with the interpretation that producers in the import-competing sector receive an implicit subsidy given by the term (t – d) rather than the nominal import tariff rate t, whereas the remainder (d – s) represents the proportion of the total distortion shifted in the form of an implicit tax on producers of exportables. What governments can determine through their trade policies is the size of the total distortion (t – s). They cannot decide how this is ultimately allocated between the import-competing and exportable sectors of the economy.

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[46] Sjaastad, "Commercial Policy, True Tariffs, and Relative Prices."

This result implies that to protect any one sector, other sectors have to be penalized, and that the degree to which the protection of one sector causes damage to other sectors depends on substitution relationships in production and demand. Thus, an import duty meant for protecting some import-competing manufacturing activities may in fact be shifted partially or completely transformed into a tax on producers of exportables, for example, of agricultural export crops. In the same way, an export subsidy designed primarily to encourage the expansion of the exportables sector may wind up partly or wholly as an import subsidy.

The incidence parameter (ω) referred to in equation (7) is derived explicitly within the framework of the three-sector model in which general equilibrium is implied by either the trade account equilibrium or equilibrium in the home goods market. It is analytically convenient to use the general equilibrium market clearing properties of the home goods sector for determining the equilibrium price relationships among the three sectors. Equilibrium in the home goods sector implies home goods demand (H^d) and equals home goods supply (H^s):

$$H^d = H^s, \tag{9}$$

where the home goods demand and supply functions are expressed as

$$H^d = H^d\,(P_m/P_h, P_x/P_h, Y), \tag{10}$$

and

$$H^s = H^s(P_m/P_h, P_x/P_h, K, L, T), \tag{11}$$

where

Y = income (GDP),

K = capital,

L = labor, and

T = technology.

K, L, and T represent the productive capacity of the economy; they can, together with Y, be held for the purpose of examining the comparatively static properties of the model where the primary interest is the movement of relative prices. Thus, after an initial displacement, the system achieves a new equilibrium, where

$$\hat{H}^d = \hat{H}^s = (\eta_m - \epsilon m)(\hat{P}_m/\hat{P}_h) + (\eta_x - \epsilon_x)(\hat{P}_x/\hat{P}_h) = 0. \tag{12}$$

In this expression, η_m and η_x represent the demand elasticities for home goods with respect to the prices of importables and exportables, and ϵ_m and ϵ_x are the corresponding supply elasticities, whereas the (ˆ) over a variable denotes a proportional change. Equation (12) is then expressed as

$$\gamma m(\hat{P}_h - \hat{P}_m) + \gamma_x(\hat{P}_h - \hat{P}_x) = 0, \tag{13}$$

where $\gamma m = \eta m - \epsilon m$, $\gamma x = \eta x - \epsilon x$, and

$$\gamma m(\hat{P}_h - \hat{P}_x) + \gamma m(\hat{P}_x - \hat{P}_m) + \gamma x(\hat{P}_h - \hat{P}_x) = 0, \tag{14}$$

so that

$$(P_h - P_x) = \omega(P_m - P_x), \tag{15}$$

where $\omega = \gamma m/\gamma m + \gamma x$ (with $0 \leq \omega \leq 1$) is the incidence parameter referred to earlier. Equation (15) is rewritten as

$$d\ln(P_h/P_x) = \omega d\ln(P_m/P_x), \tag{16}$$

with d representing the derivative of the natural logarithm of the bracketed variables. Upon integration (assuming ω constant), equation (16) is transformed into

$$\ln(P_h/P_x) = \text{constant} + \omega \ln(P_m/P_x) + \text{error term}, \qquad (17)$$

which is the basic regression equation for estimating the numerical value of ω. This equation may be disaggregated as necessary to take account of several exportable and importable subsectors.[47]

Empirical Results

The ω parameter measures the combined effects of trade and exchange rate changes and shows how the burden of the consequent changes in relative prices is shared among the sectors. The numerical value of ω reflects the proportional change in the price of home goods relative to the price of exportables as a function of the proportional change in the price of importables relative to the price of exportables. In estimating the global and disaggregated forms of the incidence parameter, an important modification is required before equation (17) can be used. Estimation based on time-series data would violate the assumption, made for analytical convenience, of constant income and productive capacity (measured by given stocks of K, L, and T), and of a balanced external account. Hence, income (Y) as measured by GDP and balance of trade (BT) have to be included as additional explanatory variables in the regression equations.

Table 16—Regression results for total exports

Independent Variable	Dependent Variable		
	$\ln(P_{H1}/P_{XT})$	$\ln(P_{H2}/P_{XT})$	$\ln(P_{H3}/P_{XT})$
Constant	0.6612 (2.3912)	−0.7805 (−2.0020)	0.1112 (2.4610)
$\ln(P_M/P_{XT})$	0.9021 (12.5960)	0.8351 (7.8673)	0.5518 (6.2113)
ln Y	−0.1156 (−2.3916)	0.1885 (2.7395)	0.1953 (2.5286)
BT	−0.0213 (−3.4712)	−0.0342 (−4.7201)	0.0011 (0.0631)
$\bar{R}^2$	0.985	0.924	0.743
D.W.	1.564	1.358	1.958
ρ	0.425	0.972	−0.044

Notes: Three variables are used as proxies for home goods. The price indexes for housing (H1) and food (H2) are the relevant components of the consumer price index. The third proxy (H3) is the index of the minimum wage rate. P_{XT} is the price of total exports.

P_M is the price of imports and P_X, that of exports; Y is income; and BT is the trade balance.

The numbers in parentheses are standard deviations.

The regression equations are estimated on the basis of annual data for 1960-82. The Cochrane-Orcutt iteration technique was used to correct for first-order autocorrelation for all estimated regression results in Tables 16 to 21. In addition to total exports (XT), estimates are produced for agricultural exports (XA), oil exports (XO), cocoa exports (XC), groundnut exports (XG), and palm kernel exports (XP). The price indexes for imports and the various export categories are constructed from corresponding unit import and unit export values in naira. For each of these export categories, three variables are used as proxies for home goods. The price indexes for housing (H1) and food (H2) are the relevant components of the composite urban and rural consumer price index. The third proxy of home goods is the index of the minimum (legally established) wage rate (H3). Sources and data for all of the variables used are given in the Appendix, Tables 24-30.

The statistical characteristics for all regression results are quite good. The adjusted fit is reasonably good, being more than 0.7 in all but three of the 18 equations. Although the estimated coefficients for the additional variables Y and BT are mixed in sign and level of statistical significance, estimates of the incidence parameter are

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[47] Disaggregation follows Jorge García García, *The Effects of Exchange Rates and Commercial Policy on Agricultural Incentives in Colombia: 1953-1978*, Research Report 24 (Washington, D.C.: International Food Policy Research Institute, 1981). In this study, only exports are disaggregated as indicated subsequently in the text.

Table 17—Regression results for agricultural exports

Independent Variable	Dependent Variable		
	$\ln(P_{H1}/P_{XA})$	$\ln(P_{H2}/P_{XA})$	$\ln(P_{H3}/P_{XA})$
Constant	0.5208	0.4401	−0.9532
	(2.5580)	(1.4798)	(−3.5151)
$\ln(P_M/P_{XA})$	0.8221	0.8165	0.8435
	(10.0050)	(6.6262)	(6.2941)
$\ln Y$	−0.0195	0.2225	0.0156
	(−3.1556)	(4.7816)	(2.3401)
BT	−0.0867	0.0531	0.0045
	(−2.5136)	(0.0050)	(1.4406)
$\bar{R}^2$	0.860	0.881	0.851
D.W.	1.894	1.385	1.507
ρ	0.728	0.417	0.916

Notes: Three variables are used as proxies for home goods. The price indexes for housing (H1) and food (H2) are the relevant components of the consumer price index. The third proxy (H3) is the index of the minimum wage rate. P_{XA} is the price of agricultural exports.

P_M is the price of imports and P_X, that of exports; Y is income; and BT is the trade balance.

The numbers in parentheses are standard deviations.

Table 18—Regression results for oil exports

Independent Variable	Dependent Variable		
	$\ln(P_{H1}/P_{XO})$	$\ln(P_{H2}/P_{XO})$	$\ln(P_{H3}/P_{XO})$
Constant	0.4437	0.0413	0.2310
	(1.1528)	(1.1636)	(3.1322)
$\ln(P_M/P_{XO})$	0.6327	0.5143	0.6911
	(8.8168)	(10.1500)	(7.9597)
$\ln Y$	0.1971	−0.0895	0.0369
	(2.1517)	(−1.2602)	(3.1029)
BT	−0.0349	−0.0066	0.0963
	(−4.8149)	(−0.6298)	(6.3714)
$\bar{R}^2$	0.941	0.887	0.881
D.W.	1.449	1.958	1.515
ρ	0.966	0.139	0.502

Notes: Three variables are used as proxies for home goods. The price indexes for housing (H1) and food (H2) are the relevant components of the consumer price index. The third proxy (H3) is the index of the minimum wage rate. P_{XO} is the price of oil exports.

P_M is the price of imports and P_X, that of exports; Y is income; and BT is the trade balance.

The numbers in parentheses are standard deviations.

statistically significant in all cases at conventional levels.

The estimated numerical values obtained for ω for all categories of exports and home goods are displayed in Table 22. These results indicate that the degree of incidence of trade and exchange rate policies on exports is very high. The relatively high estimates of the incidence parameter may be partly explained by the fact that annual data were used to generate them; intrayear variations in relative prices are therefore not adequately captured. However, a high omega value would, in general, imply that Nigeria's home goods and importables are fairly close substitutes. It would also reflect that Nigeria's exportables, being primarily resource-based (oil) or agricultural products, are fairly inelastic in supply. Hence, they tend to absorb a large proportion of the tariff incidence in the form of reduced rents to the natural resource or land. Note also that the inclusion of interaction terms in the estimated regression equations for disaggregated exports does not alter the basic results, as can be seen in Table 31 of the Appendix.[48] For total exports, estimates of the incidence parameter range from 0.55 to 0.90; they are more concentrated for agricultural exports, varying from 0.82 to 0.84. The range of ω for cocoa exports is between 0.83 and 0.86. The incidence is much lower for oil exports (0.51 to 0.69), while that for groundnut exports is from 0.61 to 0.82, and that of palm kernels lies between 0.66 and 0.79.

These results imply that a tariff on imports falls almost entirely on producers of exportable goods. It may be inferred, therefore, that Nigeria's prevailing trade and ex-

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[48] For similar results, see Larry A. Sjaastad and K. W. Clements, "The Incidence of Protection: Theory and Measurement," a paper prepared for the Conference on the Free Trade Movement in Latin America, Hamburg, F. R. Germany, June 21-24, 1981.

Table 19—Regression results for cocoa exports

Independent Variable	Dependent Variable		
	$\ln(P_{H1}/P_{XC})$	$\ln(P_{H2}/P_{XC})$	$\ln(P_{H3}/P_{XC})$
Constant	0.6940 (2.9564)	−0.7375 (−2.4492)	−1.0891 (−2.9855)
$\ln(P_M/P_{XC})$	0.8558 (9.0584)	0.8290 (5.3451)	0.8325 (4.3671)
$\ln Y$	−0.1131 (−3.0612)	0.1911 (4.1040)	0.2248 (4.0637)
BT	−0.0191 (−3.1247)	0.0846 (5.4286)	0.0159 (0.8893)
$\bar{R}^2$	0.938	0.577	0.489
D.W.	1.640	1.458	1.726
ρ	0.579	0.377	0.254

Notes: Three variables are used as proxies for home goods. The price indexes for housing (H1) and food (H2) are the relevant components of the consumer price index. The third proxy (H3) is the index of the minimum wage rate. P_{XC} is the price of cocoa exports.

P_M is the price of imports and P_X, that of exports; Y is income; and BT is the trade balance.

The numbers in parentheses are standard deviations.

Table 20—Regression results for groundnut exports

Independent Variable	Dependent Variable		
	$\ln(P_{H1}/P_{XG})$	$\ln(P_{H2}/P_{XG})$	$\ln(P_{H3}/P_{XG})$
Constant	0.6379 (2.5506)	−0.7046 (−1.9973)	−0.9202 (−3.7115)
$\ln(P_M/P_{XG})$	0.8221 (6.8622)	0.6522 (3.5098)	0.6079 (3.5540)
$\ln Y$	−0.1070 (−2.6360)	0.1863 (3.2589)	0.2004 (5.0756)
BT	0.0876 (6.2254)	−0.0300 (−3.7407)	0.0405 (1.4066)
$\bar{R}^2$	0.927	0.853	0.597
D.W.	1.588	1.391	1.839
ρ	0.617	0.973	0.132

Notes: Three variables are used as proxies for home goods. The price indexes for housing (H1) and food (H2) are the relevant components of the consumer price index. The third proxy (H3) is the index of the minimum wage rate. P_{XG} is the price of groundnut exports.

P_M is the price of imports and P_X, that of exports; Y is income; and BT is the trade balance

The numbers in parentheses are standard deviations.

change rate policies, which are designed largely to protect import-competing manufacturing activities, have also substantially reduced the relative incentive to produce export goods vis-à-vis home goods. The oil sector has had a significant adverse effect on agriculture as shown in Chapter 6.

The Dutch Disease phenomenon has penalized import-competing manufacturing activities and especially agricultural exports because of agriculture's labor constraints. In addition, general trade and exchange rate policies have given more explicit import protection to manufacturing activities than agriculture. Consequently it seems clear that both the Dutch Disease and trade and exchange rate policies have had the cumulative effect of taxing agriculture.

Because most of the protection for the import-competing activities has been at the expense of the exportable (primarily agricultural) sector, an export subsidy for agricultural crops could be justified as a means of ameliorating the adverse effect of industrial protection. Instead, Nigeria's agricultural exports have traditionally been taxed. However, an examination of protection policy for cocoa, groundnuts, and palm kernel for 1979-82 indicates that in more recent years export tax rates have declined, and in some cases negative taxes for subsidies have occurred. Thus, nominal rates of protection increased from negative rates through most of the 1960s and 1970s to positive values for some commodities by 1982.

These nominal protection rates are reproduced in Table 23 with their signs reversed to represent direct export taxes. Import tariffs in Nigeria between 1979 and 1982 averaged about 50 percent.[49] Given

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[49] Given the predominant use of quantitative restrictions during most of the 1970-82 period, the equivalent uniform ad valorem tariff is likely to have been considerably higher than the average nominal tariff of 50 percent. Therefore, the average tax burden is probably much higher than the estimates presented in the text.

Table 21—Regression results for palm kernel exports

Independent Variable	Dependent Variable		
	$\ln(P_{H1}/P_{XP})$	$\ln(P_{H2}/P_{XP})$	$\ln(P_{H3}/P_{XP})$
Constant	0.4196 (2.1572)	0.4996 (1.0944)	−0.9282 (−3.4431)
$\ln(P_M/P_{XP})$	0.6618 (4.4772)	0.6956 (4.2285)	0.7936 (2.6831)
ln Y	−0.0662 (−2.0591)	0.2895 (4.7089)	0.2209 (4.9149)
BT	−0.0189 (−3.0390)	−0.0305 (−3.7378)	0.0749 (2.4998)
$\bar{R}^2$	0.853	0.870	0.788
D.W.	2.031	1.131	1.414
ρ	0.600	0.731	0.431

Notes: Three variables are used as proxies for home goods. The price indexes for housing (H1) and food (H2) are the relevant components of the consumer price index. The third proxy (H3) is the index of the minimum wage rate. P_{XP} is the price of palm kernel exports.

P_M is the price of imports and P_X, that of exports; Y is income; and BT is the trade balance.

The numbers in parentheses are standard deviations.

Table 22—Range of values for omega estimates

Export	Estimated Omega Values
Total exports	0.55 − 0.90
Agricultural exports	0.82 − 0.84
Oil	0.51 − 0.69
Cocoa	0.83 − 0.86
Groundnuts	0.61 − 0.82
Palm kernel	0.66 − 0.79

Sources: Derived from Tables 16-21.

Note: Omega is the name given to the incidence of protection parameter.

the estimated average incidence parameter values of 0.834 for cocoa, 0.715 for groundnuts, and 0.725 for palm kernels, the corresponding implicit taxes on these commodities emanating from the average import tariff are 42.25 percent, 35.75 percent, and 36.25 percent respectively. Total taxes by commodity are made up of the direct (explicit) and implicit taxes. The total export tax falling on cocoa producers was as high as 80 percent when the implicit component of the tax was accounted for. This tax burden dropped to 18 percent in 1981 but rose again to 16 percent by 1982. The subsidies provided in 1981 and 1982 were insufficient to offset, in a countervailing sense, the adverse effects of the import tariff. Similarly, groundnuts carried a tax burden of about 37 percent in 1979, instead of an explicit tax of 1 percent. In spite of a subsidy of 18 percent in 1981, the total tax rate was 18 percent in 1981. Palm kernel producers appeared to have fared slightly better. But in general, it is clear that because of the very high value of the incidence parameter, the protection provided in recent times for agricultural export crops has not sufficiently compensated for the adverse effects of the prevailing trade and exchange rate policies.

Table 23—Explicit, implicit, and total taxes on cocoa, groundnuts, and palm kernel exports, 1979-82

Crop/Taxes	1979	1980	1981	1982
		(percent)		
Cocoa				
Explicit	38.00	8.00	−33.00	−26.00
Implicit	42.25	42.25	42.25	42.25
Total	80.25	50.25	9.25	16.25
Groundnuts				
Explicit	1.00	11.00	−18.00	n.a.
Implicit	35.75	35.75	35.75	35.75
Total	36.75	46.75	17.75	n.a.
Palm kernel				
Explicit	−3.00	0	−31.00	n.a.
Implicit	36.25	36.25	36.25	36.25
Total	33.25	36.25	5.25	n.a.

8

CONCLUSIONS

Nigeria's agriculture suffered an extraordinary decline during the period 1970-82, as the oil boom provided the impetus for a high overall economic growth rate, but it has remained an important sector of the economy. Although its share of both GDP and total exports fell substantially, agriculture still accounted for about 60 percent of the total labor force at the end of the period. Shortages and high costs of labor have played a central role in agriculture's decline. Nigeria's agriculture is unusually labor-intensive. Availability of off-farm employment opportunities, especially in the rapidly growing urban services sector, combined with the introduction of universal primary education, added impetus to the rapid urbanization. Increased dependence on hired labor and sharp increases in the rural wage rate without a matching increase in productivity meant that labor became a powerful constraint on agricultural output growth.

The rather severe increase in the cost of agricultural inputs does not appear to have been sufficiently offset by corresponding increases in output prices. The retail food price index rose about 18 percent above the composite (rural and urban) consumer price index (CPI) during 1970-82, but farm-gate prices for domestic food crops declined relative to the overall CPI. Producer prices for export crops, however, alternately rose and fell throughout 1970-82.

Agriculture's poor performance attracted increased policy attention to the need to provide effective growth incentives for the sector within the general policy goal of maintaining viable nonoil tradables during and after the oil era. To achieve this goal, Nigeria adopted a wide range of policies directed toward improving agriculture's performance. One set is aimed at improving the farmers' production environment. This included productivity-increasing measures such as research and development for seed improvement and multiplication, creation and adaptation of technology, provision of extension services, subsidized rural credit, and rural infrastructural development. Other policy measures dealt with the size and price of agricultural imports and exports, and the prices, importation, and domestic production of agricultural inputs (particularly fertilizers and capital equipment). The last two categories relate to the trade and exchange rate regime, which is the primary focus of this study.

Nigerian trade and exchange rate policies have had pervasive effects on agriculture through their influence on the sizes and prices of agricultural imports and exports as well as intermediate agricultural inputs and agricultural capital equipment. Estimates of effective protection indicate that agricultural price intervention measures implemented largely through the trade and exchange rate regime appear to have increasingly protected domestic production of agricultural crops from external competition. For most of 1960-82, however, this simply means that the rate of implicit taxation of agricultural exports was decreasing. Export crops did not begin to receive positive production incentives through protection until the early years of the 1980s.

Import-competing food crops appear to have been receiving substantial protection against imports since at least the mid-1960s. However, these policies have been implemented largely through quantitative restrictions. It is not clear whether the level of protection resulted from deliberate policy choice or was a by-product of other macroeconomic concerns (for example, the balance of payments). In any case, because of the way they have traditionally been used in Nigeria, quantitative import restriction measures involve wide short-term fluctuations in magnitude and direction. Hence the levels of protection apparently provided for food and export crops did not often indicate consistency and stability in policy intentions. In fact, a careful analysis of the relationship between the observed changes in the domestic export and cocoa export price indexes, the nominal exchange rate, and the nominal rate of protection implies that the realized levels of protection are rather insignificant. They are therefore not necessarily conducive to positive and sustained output supply response.

The oil boom had a major impact on intersectoral resource movements, particularly for agriculture. The boom, which originated from large increases in crude petroleum oil prices in 1973/74 and 1979/80, has substantially transformed the structure of the Nigerian economy. The general effects of the boom on the nonoil tradable sectors as analyzed through various models of the Dutch Disease include loss of competitiveness by the nonoil tradable sectors (as revealed, for instance, by falling relative prices); unfavorable intersectoral resource movements resulting in loss of relative shares of total output and employment; an upward trend in the real wage rate; and an appreciation of the currency. The structural transformation of an economy brought about by a resource boom involves not only substantial intersectoral shifts but also an overall expansion. This study reveals that the agricultural and manufacturing sectors (that is, the nonoil tradables) both had significant losses of output and employment shares between 1970 and 1982, whereas the services sector had impressive gains. When total changes in output and employment are analyzed, however, it is clear that all sectors gained, in varying degrees, from Nigeria's oil boom. In agriculture and manufacturing, lower relative shares of output and employment were largely compensated for by gains resulting from overall economic growth. The services sector was the primary overall beneficiary of the boom during 1970-82. This sector absorbed almost half of the total increase in output and about 70 percent of the increase in employment.

The loss of competitiveness by the nonoil tradables predicted by the Dutch Disease model shows up clearly when the international and domestic prices of agricultural crops are compared. For instance, the index of real cocoa export prices remained depressed between 1970 and 1982, while the real domestic prices of food and export crops showed a significant downward trend. Agriculture's general loss of competitiveness largely arises from trends in the real rural wage and exchange rates. Again as predicted by the Dutch Disease model, the real exchange rate declined through 1970-82, except for 1973. In terms of its external value, the naira appreciated more than 50 percent between 1973 and 1980 while the estimated real rural wage rate tripled. This condition led inevitably to agriculture's substantial loss of competitiveness.

The extent to which the prevailing trade and exchange rate policies offered effective incentives to agriculture can be established by analyzing estimates of the incidence of protection parameter, which is called omega. This shows how the burden of changes in relative prices are shared among various sectors of the economy. The numerical value of omega reflects the proportional change in the price of home goods relative to the price of exportables as a function of the proportional change in the price of importables relative to the price of exportables. In this study, the numerical estimates of omega range from 0.55 to 0.90. These estimates indicate that the degree of incidence of trade and exchange rate policies on exports is high. This implies that the impact of a tariff on imports falls almost entirely (55 to 90 percent) on producers of exportable (agricultural) products, either because Nigeria's home goods and importables are fairly close substitutes or because Nigeria's exportables, which are primarily resource-based and agricultural, are fairly inelastic in supply.

The effects of developments in the oil sector have been more adverse to agriculture than to manufacturing, mainly because of agriculture's labor constraints. In addition, general trade and exchange rate policies have offered greater explicit import protection to manufacturing. Consequently, it seems clear that both the Dutch Disease phenomenon and the trade and exchange rate regime taxed rather than protected agriculture. Subsidies provided in the 1980s for several agricultural export crops have not been sufficient to offset the adverse effects of the oil boom and general trade and exchange rate policies.

Various studies confirm that the supply of Nigerian agricultural crops is responsive to price changes.[50] But the fairly low short-run price-elasticity estimates obtained would appear to indicate that relative price changes induced by trade and exchange rate policies are probably not sufficient to bring about a substantial and sustained expansion of agricultural output in Nigeria. In other words, changes in the trade and exchange rate regime would need to be accompanied by new technologies, improved seeds, development and expansion of rural infrastructure, and other productivity-raising rural investment in order to significantly boost long-term growth performance.

The Nigerian economy remains essentially open in spite of the pervasive use of quantitative import restrictions and foreign exchange controls. The tradability of most of the agricultural products means that agricultural prices, trade policy, and exchange rate changes are inevitably linked. Hence, agricultural price intervention alone is unlikely to be effective. Furthermore, if only the industrial sector is protected, much of the burden of adjustment will fall on agriculture. Therefore, in designing policies it is important to ensure that the full implications of trade and exchange rate policies for both agricultural and nonagricultural sectors are explicitly recognized and taken into consideration.

The Nigerian oil boom has had a significant adverse effect on agricultural incentives. The capital flows associated with the boom, which depressed the real rate of exchange, and the domestic spending and resource movements progressively turned the terms of trade against the nonoil tradables, particularly agriculture. Unlike manufacturing, these sectors had no effective countervailing, sector-specific protection from the trade and exchange rate regime. The adverse effects of the oil boom on the nonoil tradables could have been ameliorated by exporting surplus capital or by accumulating foreign exchange reserves, foreign investments, and repayment of foreign debts. This would have enabled the country to gradually repatriate the surplus funds over time to finance domestic investment with sufficiently high yields without causing wide fluctuations or sharp depression in the real rate of exchange. Unfortunately, Nigeria's management of its oil revenue appears to have been the direct opposite of this. Hence, the adverse effect of movement in the real exchange rate on the largely unprotected agricultural tradables sector was progressively worsened by further foreign indebtedness. Between 1976 and 1982, total public and publicly guaranteed disbursed debt rose from less than U.S. $1 billion to almost U.S. $12 billion. Perhaps this monumental macroeconomic management failure can best be explained as a lack of political will to resist generalized and special-interest pressures.

Additional questions of significant policy relevance arose during this study. One concerns the extent to which trade and exchange rate policies need to be accompanied by other policies, particularly in the institution, technology, and infrastructure areas, in order to achieve agricultural output growth targets. Another major unanswered question is the relationship between changes in the real exchange rate and the labor flow between rural and urban activities. The impact of real exchange rate changes on production incentives must recognize and take account of the labor market as a means of translating apparent protection into effective incentives. These and related questions call for more detailed research for a more comprehensive understanding of the forces that currently impede the expansion of agricultural output in Nigeria.

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[50] Results of these studies can be found in M. E. Bond, "Agricultural Responses to Prices in Sub-Saharan African Countries," *IMF Staff Papers* 30 (December 1983): 703-726.

APPENDIX: SUPPLEMENTARY TABLES

Table 24—Producer prices of major agricultural crops, 1963-82

Year	Cocoa	Cotton	Groundnuts	Palm Kernels	Palm Oil	Soybeans	Benniseed
				(₦/metric ton)			
1963	212	88	78	54	80	46	90
1964	232	92	82	54	80	46	92
1965	122	94	84	56	82	46	92
1966	172	90	84	54	80	46	92
1967	182	86	74	56	82	46	92
1968	192	110	50	58	82	36	94
1969	262	108	55	57	81	37	75
1970	295	108	63	57	81	37	81
1971	297	108	67	61	89	37	81
1972	297	122	75	61	89	37	81
1973	354	132	80	61	89	47	105
1974	487	156	145	124	204	60	169
1975	660	308	250	150	265	99	264
1976	660	308	250	150	265	99	264
1977	660	308	275	150	295	130	264
1978	1,030	330	350	150	355	135	290
1979	1.200	330	350	180	450	135	300
1980	1,300	400	420	200	495	150	300
1981	1,300	465	420	200	495	155	315
1982	1,300	510	450	230	495	175	315

Sources: Nigeria, Federal Office of Statistics, *Economic and Social Statistics* (Lagos: FOS, various years); Central Bank of Nigeria, *Annual Report and Statement of Accounts* (Lagos: CBN, various years); and Central Bank of Nigeria, *Economic and Financial Review*, various issues.

Table 25—Output indexes of major agricultural crops, 1965-80

Year	Cocoa	Groundnuts	Rice	Maize	Cassava	Yams
				(1965 = 100)		
1965	100.0	100.0	100.0	100.0	100.0	100.0
1966	100.0	85.6	87.9	91.5	102.5	100.0
1967	89.1	78.8	170.0	88.8	104.9	89.1
1968	71.9	91.7	155.8	85.4	107.6	71.9
1969	82.8	93.3	143.5	126.7	110.5	82.8
1970	114.2	79.9	151.4	116.8	124.7	114.2
1971	96.3	78.5	171.3	84.4	112.1	96.3
1972	90.3	47.8	197.4	95.7	116.9	90.3
1973	80.5	17.7	215.0	49.2	117.3	80.5
1974	80.1	20.2	231.8	109.3	122.3	80.1
1975	80.5	14.2	227.4	113.3	129.6	80.5
1976	61.8	25.3	170.9	116.9	132.0	61.8
1977	75.7	15.3	180.1	121.4	129.5	75.7
1978	59.9	22.8	227.4	133.1	128.3	59.9
1979	67.4	27.2	264.9	134.9	128.3	67.4
1980	65.5	28.2	320.1	139.4	134.4	65.5

Sources: Nigeria, Federal Office of Statistics, *Economic and Social Statistics* (Lagos: FOS, various years); Central Bank of Nigeria, *Annual Report and Statement of Accounts* (Lagos: CBN, various years); and Central Bank of Nigeria, *Economic and Financial Review*, various issues.

Table 26—Indexes of domestic prices of major food crops, 1965-80

Year	Rice	Maize	Cassava	Yams
		(1965 = 100)		
1965	100.0	100.0	100.0	100.0
1966	126.2	146.0	175.3	148.0
1967	115.1	95.7	119.0	107.8
1968	114.5	100.7	103.3	100.0
1969	126.1	144.4	67.0	117.0
1970	141.6	137.0	116.4	157.0
1971	185.0	189.2	181.0	248.0
1972	149.6	174.0	135.0	219.5
1973	140.1	152.0	112.4	268.0
1974	180.3	165.0	123.5	612.2
1975	198.4	204.0	213.0	422.1
1976	265.3	312.0	307.0	489.6
1977	313.6	443.0	414.4	826.2
1978	373.0	443.1	539.2	1,111.2
1979	400.0	500.0	520.0	1,120.0
1980	465.4	546.5	509.3	1,132.0

Sources: Nigeria, Federal Office of Statistics, *Economic and Social Statistics* (Lagos: FOS, various years); Central Bank of Nigeria, *Annual Report and Statement of Accounts* (Lagos: CBN, various years); and Central Bank of Nigeria, *Economic and Financial Review*, various issues.

Table 27—Price indexes for selected export crops, 1960-82

Year	All Agricultural Exports	Cocoa	Groundnuts	Palm Kernels
		(1960 = 100)		
1960	100.0	100.0	100.0	100.0
1961	87.6	69.2	102.3	100.0
1962	81.9	61.5	95.5	86.2
1963	87.6	64.7	88.6	86.2
1964	88.2	67.9	88.6	93.1
1965	89.6	74.4	93.2	93.1
1966	89.3	39.1	93.2	93.1
1967	91.6	57.1	93.2	96.6
1968	94.1	60.3	70.5	100.0
1969	108.0	85.3	63.6	98.3
1970	104.7	94.6	71.6	98.3
1971	96.9	95.2	76.1	105.2
1972	85.4	95.2	85.2	105.2
1973	149.4	113.5	90.9	213.8
1974	201.5	156.1	164.8	258.6
1975	136.4	211.5	284.1	258.6
1976	169.3	211.5	284.1	258.6
1977	340.4	330.1	312.5	258.6
1978	293.7	330.1	329.5	310.3
1979	293.1	384.6	397.7	310.3
1980	204.4	384.6	397.7	344.8
1981	233.4	416.7	477.3	344.8
1982	214.2	416.7	477.3	344.8

Sources: Nigeria, Federal Office of Statistics, *Economic and Social Statistics* (Lagos: FOS, various years); Central Bank of Nigeria, *Annual Report and Statement of Accounts* (Lagos: CBN, various years); and Central Bank of Nigeria, *Economic and Financial Review*, various issues.

Table 28—Index of agricultural production, 1975-82

Year	Aggregate Index	All Crops	Staple Crops	Other Crops
		(1975 = 100)		
1975	100.0	100.0	100.0	100.0
1976	93.9	88.8	88.7	89.1
1977	88.7	79.7	75.7	94.0
1978	88.5	77.7	70.8	99.1
1979	87.2	73.9	64.4	104.0
1980	89.4	77.7	67.6	109.4
1981	92.4	84.3	70.1	115.1
1982	91.9	85.5	74.7	120.3

Source: Central Bank of Nigeria, *Annual Report and Statement of Accounts* (Lagos: CBN, various years).

Table 29—Guaranteed minimum prices for food crops, 1976-82

Year	Millet/ Sorghum	Maize	Rice (Paddy)	Rice (Milled)	Gari (Processed Cassava)	Yams	Beans	Wheat
				(₦/metric ton)				
1976	80	95	185	. . .	85	85	. . .	. . .
1977	110	130	240	400	110	120	180	. . .
1978	110	130	240	400	110	120	180	. . .
1979	220	200	329	570	. . .	. . .	345	235
1980	220	200	329	570	. . .	. . .	345	235
1981	231	210	345	596	. . .	. . .	362	247
1982	231	210	400	596	. . .	. . .	362	280

Sources: Nigeria, Federal Office of Statistics, *Economic and Social Statistics* (Lagos: FOS, various years); Central Bank of Nigeria, *Annual Report and Statement of Accounts* (Lagos: CBN, various years); and Central Bank of Nigeria, *Economic and Financial Review*, various issues.

Table 30—Domestic price indexes, 1960-82

			Home Goods		
Year	Exportables (P_x)	Importables (P_m)	Housing (P_{h1})	Food (P_{h2})	Minimum Wage (P_{h3})
			(1960 = 100)		
1960	100.0	100.0	100.0	100.0	100.0
1961	91.8	100.0	104.9	108.0	100.0
1962	87.4	99.5	106.0	114.7	100.0
1963	91.8	101.3	108.6	106.5	100.0
1964	76.3	103.1	109.4	110.7	100.0
1965	76.3	104.9	116.9	113.6	100.0
1966	76.3	107.4	119.5	130.5	100.0
1967	76.3	107.6	124.4	120.1	100.0
1968	76.3	106.9	125.8	112.6	100.0
1969	76.3	110.5	129.3	133.9	100.0
1970	76.3	115.9	137.3	164.4	137.0
1971	104.3	131.4	147.0	211.4	137.0
1972	104.3	143.5	156.9	216.6	137.0
1973	424.1	161.1	156.4	223.6	137.0
1974	406.2	235.3	160.7	258.9	462.0
1975	421.7	255.7	203.1	367.7	462.0
1976	465.3	257.4	212.3	464.7	462.0
1977	531.5	270.9	258.3	539.4	462.0
1978	522.0	303.4	266.9	632.1	462.0
1979	713.9	405.6	339.0	682.8	462.0
1980	115.4	474.6	360.1	734.7	769.0
1981	1,366.9	390.0	351.7	920.1	769.0
1982	1,592.0	367.2	365.6	1,001.6	962.0

Source: Nigeria, Federal Office of Statistics, *Economic and Social Statistics* (Lagos: FOS, various years).
Note: Housing and food prices are components of the composite consumer price index.

Table 31—Supplementary regression results for aggregate exports

Independent Variable	Dependent Variables				
	$\ln(P_{H1}/P_{XA})$	$\ln(P_{H1}/P_{XC})$	$\ln(P_{H1}/P_{XO})$	$\ln(P_{H1}/P_{XG})$	$\ln(P_{H1}/P_{XP})$
Constant	0.2513 (2.4090)	0.5960 (2.8610)	0.4123 (1.0182)	0.3920 (1.2571)	0.8532 (2.1705)
$\ln(P_M/P_{XA})$	0.8205 (5.5514)	...	...	...	...
$\ln(P_M/P_{XC})$	...	0.8368 (7.9840)	...	...	...
$\ln(P_M/P_{XO})$	...	...	0.5539 (4.7192)	...	...
$\ln(P_M/P_{XG})$	...	...	...	0.7539 (5.4066)	...
$\ln(P_M/P_{XP})$	...	...	...	...	0.6893 (3.0573)
$\ln(P_{XA}/P_X)$	−0.0035 (−0.2316)	...	...	...	...
$\ln(P_{XC}/P_X)$	...	−0.0013 (−0.0531)	...	...	...
$\ln(P_{XO}/P_X)$	...	...	0.0145 (0.0002)	...	...
$\ln(P_{XG}/P_X)$	...	...	...	−0.0030 (−0.0600)	...
$\ln(P_{XP}/P_X)$	...	...	...	...	−0.0405 (−1.0039)
$\bar{R}^2$	0.750	0.823	0.872	0.897	0.733
D.W.	1.920	1.708	1.045	1.891	1.741

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THE EFFECTS OF TRADE AND EXCHANGE RATE POLICIES ON AGRICULTURE IN ZAIRE

Tshikala B. Tshibaka

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CONTENTS

Foreword

1. Summary 9

2. Agriculture in Zaire 11

3. Zairian Economic Policies 15

4. Definitions and Measures of Agricultural Price Interventions 21

5. Estimating the Incidence of Trade and Exchange Rate Policies on Relative Agricultural Prices 30

6. The Trade-Off Between Food and Export Crops 36

7. Conclusions 39

Appendix 1: Supplementary Tables 41

Appendix 2: Elasticity Estimates of Crop Output Supply 51

Bibliography 63

TABLES

1. Growth of agricultural output and exports by crop, 1961-82 13
2. Annual average growth rate of staple food supply, 1961-81 14
3. Import and export tax performance indicators, 1970 and 1974-77 18
4. Implicit rates of protection of farm products, five-year averages, 1971-82 24
5. Average domestic relative prices and real exchange rates, 1966-82 28
6. Rate of change of real exchange rates, growth rates of farm and gross domestic output, 1966-82 29
7. Regression results for total, agricultural, and nonagricultural exports, 1970-82 34
8. Growth of food import volume, 1966-82 41
9. Food import bill, 1966-81 41
10. Sources of food supply, 1966-81 42
11. Food import capacity, 1966-81 42
12. Inflation, exchange rates, and balance of payments, 1966-83 43
13. FAO and Zairian crop export data, 1966-75 43
14. Government expenditures, 1966-81 44
15. Domestic inflation, money supply, and claims on government, 1966-82 44
16. Share of agriculture in the government budget, 1970-81 45
17. International price indexes for Zairian imports and exports, 1970-81 45
18. Implicit rates of protection of farm products, 1971-82 46
19. Official floor producer prices for major staple food commodities, 1975-81 46
20. Output indexes for major traded farm crops, 1963-81 47
21. Indexes and annual changes of domestic prices and the official exchange rate, 1966-82 48
22. Domestic relative prices and the real exchange rate, 1966-82 49
23. Overall rate of import tariff, selected years 49
24. Values of imports and exports of selected agricultural commodities, 1970-82 50
25. Indexes of wages in the private and public sectors, 1971-82 52
26. Indexes of the legal minimum wage data, 1973-82 52
27. Regression results for palm oil, 1970-82 54
28. Average producer's price for major agricultural commodities, 1970-83 56
29. Output of selected major crops, 1963-83 56
30. Regression results for cotton, 1970-82 57
31. Regression results for groundnuts, 1970-82 59
32. Regression results for maize, 1970-82 61

ILLUSTRATIONS

1. Implicit rates of protection of importables, exportables, and all farm products, 1971-82 25
2. Output indexes for major traded farm crops, 1963-81 26
3. Domestic prices and official exchange rates, 1966-82 27
4. Domestic relative prices and the real exchange rate, 1966-82 28
5. Indexes of palm oil output, and of the deflated producer prices for palm oil and rice, 1970-82 55
6. Indexes of cotton output, and of the deflated producer prices for cotton and maize, 1970-82 58
7. Indexes of groundnut output, and of the deflated maize producer prices for groundnuts and maize, 1970-82 60
8. Indexes of maize output, and of the deflated producer prices for maize and cotton, 1970-82 62

FOREWORD

The International Food Trade and Food Security Program at IFPRI has undertaken a series of country studies on trade and exchange rate regimes and how they affect agricultural incentives in developing countries.

This major research thrust was prompted by the global economic turbulence experienced in the past decade. Oil price shocks, rapid inflation, and sharp fluctuations in food prices are only some of the symptoms of this turbulence. The desire to develop their industrial sectors and the availability of low real interest rates encouraged many developing countries to borrow more than they could easily repay, which has led to grossly overvalued exchange rates. The extent to which this overvaluation has discriminated against agricultural exports and agriculture in general is a question that is receiving increasing attention among researchers and policymakers alike.

In addition to this study on Zaire, other studies in this series have included *The Effects of Exchange Rates and Commercial Policy on Agricultural Incentives in Colombia: 1953-78,* Research Report 24, by Jorge García García; "Coffee Boom, Government Expenditure, and Relative Prices in Agriculture: The Colombian Experience," also by Jorge García, with Gabriel Montes; *Agriculture and Economic Growth in an Open Economy: The Case of Argentina,* Research Report 36, by Domingo Cavallo and Yair Mundlak; and most recently *The Effects of Trade and Exchange Rate Policies on Agriculture in Nigeria,* Research Report 55, by T. Ademola Oyejide. Research is under way for country studies on the Philippines, Chile, Peru, and Thailand.

The complete series of studies will be presented at an IFPRI policy workshop planned for 1987. They will provide a broad view of how trade and exchange rate policy influences agricultural growth in developing countries, supported by quantitative data on relative effects.

This research effort, a part of that series, focuses on Zaire, a major mineral exporter. Because the mineral sector is regarded as the engine of the economy, the attention directed to it has detracted from the competitiveness and growth of other sectors, agriculture in particular. These problems have been compounded in Zaire by domestic policies aimed at rectifying a deteriorating balance of payments.

Tshikala Tshibaka came to IFPRI from the Institut Facultaire des Sciences Agronomiques in Yangambi, Zaire. Specialized issues such as exchange rates and relative prices must be analyzed in a broad context if the analyses are to be useful. Tshibaka brings a special talent and experience to this kind of analysis of the Zairian economy.

This study was partially funded by the Ford Foundation's office in Lagos, Nigeria, and by the International Development Research Centre of Canada. IFPRI is particularly grateful to these two organizations for their encouragement and support of this work on Sub-Saharan Africa.

John W. Mellor

Washington, D.C.
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I present my deep appreciation to John W. Mellor for his interest and encouragement at every stage of this research, and to Alberto Valdés, project leader, for valuable interactions and discussions. I am also indebted to Romeo Bautista and T. Ademola Oyejide for their comments on an earlier draft. The able computer assistance of Suzanne Gnaegy also is appreciated. Finally, my greatest debt is to the members of my family, specifically to my wife, Tshibola wa Kazadi, who selflessly endured alone the burden of maintaining our family in Zaire.

1

SUMMARY

Trade, exchange rate, and other price policies adopted by Zaire since 1960 have negatively affected the agricultural sector. Because farming is the major source of employment and food and its contribution to both GDP and foreign exchange earnings is large, the overall economy also has been seriously affected.

This study covers not only policies directed specifically to agriculture but also those enacted to assist other sectors. Policies directed at nonfarm sectors may have more effect on agricultural incentives than those explicitly aimed at the farm sector.

However, because the study is based on official time series data, it is restricted to the formal sector of the economy. Accurate data on the parallel sector of the economy—unofficial trade and marketing activities—are unavailable. Thus the picture presented is not comprehensive but only indicative of the effects of economic policies on agriculture and the economy as a whole.

The centrality of the real exchange rate in the economic development process is emphasized. A falling real exchange rate (domestic terms of trade of foreign exchange with respect to nontradable goods) makes exportable goods less profitable. This leads producers of both farm and nonfarm exports to divert resources to other activities. As a result, the export sector contracts, and the ability of the country to earn enough foreign exchange is reduced. In addition, outflow of capital is encouraged.

This creates a precarious situation. The limited foreign exchange earnings available restrict imports not only of consumer goods but also of capital and intermediate goods. Limited import capacity affects the productive capacity of the economy because investment in development of human resources and infrastructure is constrained. The impact will be greatest on the farm sector, but the economy as a whole will be severely affected. If the trend is not reversed through appropriate real exchange rate management, long-term development of all sectors will be jeopardized.

The Zairian economy has gone through three distinct phases since 1960. The 1960-65 period was marked by political crises and economic disorders. Major policy measures adopted in 1961 to restrain a deteriorating balance-of-payments position included an increase in import duties, import licensing, a 28 percent devaluation of the domestic currency, and foreign exchange controls. However, complementary policies such as investment, credit, price, and income distribution measures were not instituted, and the deterioration continued.

A second reform in 1963 introduced a dual exchange rate system, which resulted in devaluations for imports of raw materials and capital goods as well as consumer goods and exports. In addition, credit to the private sector and salary increases were restricted. Civil war broke out in 1962, before the reforms could take effect, and farm output as well as overall economic activity declined. Staple food crop output grew only 1.8 percent per year in 1961-65 compared with 3.8 percent for the population growth rate. Output of major export crops fell at an annual rate of 9.4 percent.

Recovery in 1966-70 was hastened by an influx of significant international aid and the adoption of less restrictive trade and exchange rate policies. Annual rates of output rose 4.0 percent for staple foods and 8.9 percent for major export crops. GDP grew by 6.4 percent.

Restrictive trade and exchange rate policies were again adopted in 1971-82 to deal with balance-of-payment and budget deficits. But basic economic indicators continued to decline. The annual rate of growth of staple food crops fell to 1.6 percent, that of major export crop output to 0.8, and that of GDP to 0.4 percent. The real exchange rate increased 0.8 percent annually during 1966-70 but fell 0.6 annually during 1971-82, which contributed to the declining performance of the farm sector and the overall economy.

All major crops were taxed during 1971-82 except rice and palm oil. Rates of taxation were, in decreasing order, highest for cotton, coffee, groundnuts, and maize. Overall, export crops were discriminated against more than food crops. The extent of taxation or subsidy suggests that the agricultural sector was discriminated against. There also appears to be a conflict between food and export crops in production. A change in relative prices affects the food-export crop mix.

The effects of trade and exchange rate policies on relative prices have a substantial impact on the structure of incentives. The domestic price of farm and nonfarm non-tradable goods relative to all exportables would increase by about 0.52 percent as a result of a 1 percent rise in the domestic price of all importables relative to all exportables.

This result implies that in Zaire, a uniform (average) tariff of, say, 10 percent on all imports is equivalent to a tax of 5.2 percent on all exports. This further implies that at least half of the burden associated with protection of importables against foreign competition is borne by farm and nonfarm exportable goods. Moreover, when the direct tax imposed on exportable commodities is added to this indirect tax, the level of total taxation of exportable commodities is much higher than intended by policymakers. The resulting squeeze on the export sector makes it hard for it to generate enough foreign exchange to meet the import requirements of both farm and nonfarm sectors.

Clearly, protection aimed at encouraging import substitution will, in the last resort, also impede expansion of import-competing activities. A uniform treatment of both importables and exportables would help Zaire take advantage of its large agricultural and mineral resources. Uniform treatment means the same level of effective taxation on all tradables. Thus, government revenue objectives could be obtained while affecting all sectors of the economy neutrally.

2

AGRICULTURE IN ZAIRE

The agricultural sector of Zaire has two basic components: traditional and modern plantation agriculture. Traditional agriculture is handled by peasant farmers who rely mostly on household labor, which is the main determinant of production. The capital available is almost negligible and is composed largely of hand tools and seeds from previous crops. Land is abundant overall and access to it not a constraint, but the cultivated area per household rarely exceeds one hectare in the forest zone and two hectares in the savannah region. The limited amount of capital and the pattern of labor allocation among household activities (farm, nonfarm, economic, domestic, and sociocultural) seem to be the chief constraints to an increase in cultivated areas in the peasant sector.[1]

Technological change occurs so slowly in peasant agriculture that it is hardly noticeable. Shifting cultivation continues to be the most prevalent method of production, except in areas in the eastern and western parts of the country where population growth has increased pressures and led to more intensive use of arable land.

Plantations are owned mainly by large foreign-owned corporations, though some are owned by Zairians. Output depends on both paid labor and capital. Because of the use of machinery, processing plants, and intermediate producer goods, the share of capital in plantation agriculture is much higher than in peasant farming.

Plantation agriculture produces entirely for market, whereas peasant agriculture produces for both farm household consumption and the market. Nearly all of the food crops, cotton, and groundnuts are produced on peasant farms. In some areas of the country, peasant farmers also produce some coffee and palm oil, which are largely if not totally sold in the domestic market. The bulk of export crops such as coffee, cocoa, rubber, tea, and palm oil is produced on plantations.

Importance of Agriculture

Zaire is relatively well endowed with natural resources. Because its mineral deposits have tended to overshadow its agricultural resources, policymakers have paid relatively little attention to agriculture and have regarded mining as the engine of economic growth. Despite this view, agriculture remains a mainstay of the Zairian economy and the growth of other sectors is largely dependent on it.

About 75 percent of the population lives in rural areas, and at least 80 percent of the labor force is engaged in agriculture. Nevertheless, agriculture's contribution to GDP has been only about 40 percent during the entire postindependence period.[2] An objective of this study is to determine whether agriculture's relatively small share of GDP is an indicator of structural transformation of the economy or is a result of policies that have slowed its growth.

The share of the farming sector in foreign exchange earnings, which amounted to 38.9 percent in 1959, fell to 16.0 percent during the 1971-81 period.[3] The overwhelming share of export earnings was contributed by mining. This has been a key variable used by Zairian policymakers in ranking the potency of different sectors in promoting overall economic growth.

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[1] See Tshikala B. Tshibaka, "Economic Analysis of Rice Production in the Zairian Basin," International Food Policy Research Institute, Washington, D.C., 1986 (mimeographed).

[2] Banque Nationale du Zaire (Congo), *Rapport Annuel* (Kinshasa: Banque Nationale du Zaire [Congo], various years).

[3] Ibid.

Performance of Agriculture

Growth of Farm Output

Agricultural output in Zaire has gone through three distinct periods of growth since the country gained its independence on June 30, 1960. The 1960-65 period was characterized by a decline, mainly explained by the violent political strife that led to the destruction of the preindependence economic infrastructure.

Table 1 shows that during 1961-65 total cereal production dropped an average of 3.7 percent per year and groundnut output 1.5 percent, but production of roots, tubers, bananas, and plantains grew at an annual average rate of 2.7 percent. Aggregate production of these staple foodstuffs grew 1.8 percent a year, which was far below the 3.8 percent rate of population growth.

Recovery was rapid during 1966-70, when total output of staple food crops grew at an annual average rate of 4.0 percent and that of major export crops at 8.9 percent.[4]

Since the recovery period, 1971-82, the performance of the farming sector has not been encouraging. The annual average growth rate of staple food crop output dropped to 1.6 percent, much lower than the estimated population growth rate of 2.8 percent. The export crop subsector was affected the most during 1971-82. Aggregate major export crop output grew at an annual average rate of 0.8 percent, with palm kernels, natural rubber, cocoa beans, and palm oil declining.

Coffee farming followed a different pattern. Its annual rate of output growth, which was 3.3 percent during the crisis period, increased to about 7.1 percent during the recovery and then fell to 2.4 percent in the postrecovery period. The reason is not clear. However, it may have been because most of the coffee plantations are in eastern and northeastern border areas, which facilitated smuggling to avoid price controls, taxes, and overvalued exchange rates.[5]

Cotton is the only export crop that is solely produced by peasant farmers. Through the Société de Textiles Cotonnière (SOTEXCO), which was created in 1976, the government effectively applied a number of measures, mainly coercive, to push farmers to produce more cotton to meet the demand of newly established textile plants. Production increased about 6.7 percent per year during 1976-82. During the entire 1971-82 postrecovery period, cotton output grew at an annual rate of only about 0.7 percent.

Exports and Imports

The substantial decline in the volume of crop exports during 1961-65 was mainly the result of political events. It was followed by a sharp increase in the recovery period and then another decline. Palm oil and palm kernel oil exports declined at a rate of 25.8 percent and 9.2 percent during 1971-82, while exports of natural rubber decreased at an annual rate of 4.5 percent and cocoa bean exports at 2.3 percent. Cotton disappeared completely from the export list in 1977.

Increased food imports are additional evidence of the poor performance of the agricultural sector. During the recovery period, the volume of food imports increased at an annual rate of 2.1 percent, but the rate jumped to 7.2 percent during the postrecovery period, when overall imports were contracting at an annual rate of 5.9 percent (see Appendix 1, Table 8).

Although the share of food imports in the total import bill remains relatively small, it has been rising. During 1966-70 cereals were about 3.3 percent and other food items 4.4 percent of the total imported. These shares rose to 8.0 percent for cereals and 6.3 percent for other food items during 1971-81. However, the degree of food import dependency in Zaire is still low (Appendix 1,

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[4] This impressive rate of growth of export crop output is explained by its low level in 1965, following the Civil War.

[5] World Bank, *Country Study: Zaire* (Washington, D.C.: World Bank, 1980).

Table 1—Growth of agricultural output and exports by crop, 1961-82

	1961-65		1966-70		1971-82	
Crop	Output Growth	Export Growth	Output Growth	Export Growth	Output Growth	Export Growth
			(percent)			
Staple food crops	1.8	. . .	4.0	. . .	1.6	. . .
Cereals	−3.7	. . .	9.1	. . .	2.8	. . .
Nongrain food	2.7	. . .	2.2	. . .	1.9	. . .
Pulses (groundnut)	−1.5	. . .	8.4	. . .	1.7	. . .
Major export crops	−9.4		8.9		0.8	. . .
Palm oil	−13.5	−17.0	12.8	49.6	−1.1	−25.8
Green coffee[a]	3.3	−9.7	7.1	28.7	2.4	8.2
Palm kernel	−10.9	−7.2	12.5	10.5	−5.2	−9.2
Natural rubber	−12.2	−11.8	10.3	10.5	−1.4	−4.5
Cotton	−21.2	−27.1	23.2	. . .	0.7	. . .
Cocoa beans	−8.6	−8.6	9.0	5.9	−1.2	−2.3

Sources: Derived from data in Food and Agriculture Organization of the United Nations, "FAO Food Balance Sheets, 1961-65 Average to 1977," Rome, 1978 (computer printout); and Food and Agriculture Organization of the United Nations, *FAO Production Yearbook*, various issues (Rome: FAO, various years).

Notes: Cereals include maize, rice, sorghum, and millet. Nongrain food includes cassava, sweet potatoes, bananas, and plantains.

[a] Export growth refers to robusta coffee only, whereas output growth refers to both robusta and arabica.

Table 9). During 1966-70 production of staple food crops accounted for 96.2 percent of the domestic supply, with the remainder filled by cereal imports.[6] The volume of staple food crop output in the domestic supply dropped to 93.8 percent during 1971-81 (Appendix 1, Table 10).

According to trade data, the food import bill averaged 9.5 percent or less of total export earnings during 1971-81. In 1976, however, food imports were equivalent to 20.0 percent and in 1978 to 17.5 percent of total export revenue (Appendix 1, Table 11). These high ratios may be explained by a large increase in the food import bill and a substantial drop in export revenues, mainly as the result of a fall in world copper prices.[7] These are, of course, events over which the Zairian government had little control, except for reducing the volume of imports.

The ability of export agriculture to finance food imports proved to be limited. The food import bill, which represented 43 percent of crop export earnings during 1966-70, claimed nearly 70 percent of agricultural export earnings during 1971-81.

The Food Supply Situation

Even though Zaire's domestic food crop production provides a large share of the domestic food consumed, and dependency on food crop imports is still low, Table 2 shows that the total staple food supply has been declining since 1966-70. As pointed out earlier, the annual rate of growth of the staple food crop supply was far below the rate of population growth during the period.

This situation has created hardships for many of the people of Zaire. A 10-year field study on nutrition and health reveals that malnutrition has been spreading rapidly. Average calorie intake was 80 to 90 percent

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[6] The share of the food output in the domestic food supply measures the extent of food self-sufficiency in a country. It is formally given by the expression: $fs = Q/(Q + M - X)$, where Q is the domestic food output and M and X are the quantities of food imported and exported, respectively.

[7] World Bank, *Country Study: Zaire*, p. 27.

Table 2—Annual average growth rate of staple food supply, 1961-81

Period	Annual Average Growth Rate of Staple Food Crop Output	Annual Average Growth Rate of Cereal Imports	Annual Average Growth Rate of Total Staple Food Crop Supply
		(percent)	
1961-65	1.8	35.0	2.3
1966-70	4.0	11.2	4.1
1971-75	2.4	5.2	2.0
1976-81	1.1	14.8	1.6
1971-81	1.6	10.4	1.8

Sources: Derived from data in Food and Agriculture Organization of the United Nations, "FAO Food Balance Sheets, 1961-65 Average to 1977," Rome, 1978 (computer printout); Food and Agriculture Organization of the United Nations, *FAO Production Yearbook*, various issues (Rome: FAO, various years); International Food Policy Research Institute, "Food Aid Tape," Washington, D.C., 1981; and Zaire, Institut National des Statistiques, *Annuaires Statistiques* (Kinshasa: Institut National des Statistiques, various years).

of minimum requirements.[8] This suggests that food production and food imports fell short of meeting growing food needs.

The fact that the food import bill was low relative to export earnings suggests that enough agricultural capital and intermediate goods could have been imported to boost domestic food production sufficiently to fill the gap between supplies and requirements. However, the composition of imports shows that a large share of export earnings was allocated to imports of nonagricultural capital and intermediate goods needed for the industrialization program and expansion of the mining sector. This was in line with the government's economic development strategy, in which industrialization was a key element even though agriculture was long ago proclaimed to have top priority.

In summary, 1961-65 was marked by serious political disorders that led to a fall in economic activity. This situation was reversed during 1966-70, when the economy as a whole and agriculture in particular performed quite well. But during 1971-82, the farming sector contracted. This has significantly contributed to the contraction of the overall economy.

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[8] Ibid., pp. 24-25.

3

ZAIRIAN ECONOMIC POLICIES

Accelerated economic development through industrialization has been the main economic goal of Zairian policymakers during the post-independence period. A wide range of economic policy instruments has been used. The role of agriculture has been to provide cheap basic food and to contribute to foreign exchange earnings needed to import industrial capital goods and raw materials. Some of the economic policies that have been enacted were specific to agriculture while others were broader in scope and in some cases apparently unrelated to agriculture.

Macroeconomic Adjustment Policies: An Overview

The first major policy measures after independence were taken in November 1961. They included an increase in import duties, import licensing, a 28 percent devaluation of the local currency, and exchange controls. The main objective was to restrain a deteriorating balance-of-payments position.[9] However, complementary policies such as investment, credit, price, and income distribution policies were not instituted. Consequently, the balance of payments continued to deteriorate.[10]

A second reform in 1963 introduced a dual exchange rate system. A rate of 0.081 zaire (Z) to U.S. $1.00 was to be used for imports of producer goods, and a rate of Z 0.165 to U.S. $1.00 was to be used for imports and exports of consumer goods.[11] These were devaluations of 26.6 percent and 157.8 percent, respectively. Simultaneously, a ceiling was established on credit granted to the private sector. Salary increases were restricted. Unfortunately, this reform did not have enough time to work as civil war broke out in the country. From 1964 a single foreign exchange rate was applied to all import and export activities. A political crisis led to a military coup in November 1965.

A third reform in 1967 included reduction of the government deficit by increasing receipts and cutting public expenditures, devaluation of the currency corresponding to a 201.8 percent increase in the official exchange rate (expressed as number of units of local currency per unit of foreign currency), reduction of exchange controls, limitation of salary increases, and restriction of the increase in credit accorded to the private sector. The Banque Nationale du Congo notes that the immediate results of this reform were favorable. Foreign exchange earnings increased substantially from both the farming and mining sectors. The foreign exchange reserve also increased.[12] Gross domestic output increased at an annual rate of 6.4 percent, total output of staple food crops at 4.0 percent, and major export crops at 8.9 percent during 1966-70. Undeflated export earnings from agriculture and mining rose at annual rates of 9.4 percent and 22.0 percent during this period.[13]

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[9] K. M. Cleaver, "The Effective Rate of Subsidy and Resource Allocation in Zaire" (Ph.D. thesis, Tufts University, Fletcher School of Law and Diplomacy, 1975), pp. 4-7.

[10] Banque Nationale du Congo, *Rapport de 1963* (Kinshasa: Banque Nationale du Congo, 1964).

[11] Congolese francs were the currency until 1967, when a new currency, the zaire (Z), was adopted. Francs were converted to zaire at the rate of 1,000 Congolese francs for Z 1.00 (International Monetary Fund, *Financial Statistics Yearbook* [Washington, D.C.: IMF, 1979]).

[12] Banque Nationale du Congo, *Rapport de 1967* (Kinshasa: Banque Nationale du Congo, 1968).

[13] Food and Agriculture Organization of the United Nations, *FAO Production Yearbook*, various issues (Rome: FAO, various years); and International Monetary Fund, *International Financial Statistics Yearbook, 1984* (Washington, D.C.: IMF, 1984), p. 625.

The real value of the local currency in terms of foreign exchange began to deteriorate in 1969, resulting in the progressive reimposition of restrictions on imports and foreign exchange transactions. The current account, which was positive during 1966-69, became negative in 1970 and continued to deteriorate and so did the real value of the domestic currency in terms of foreign exchange. From 1970 to 1975 the current account deficit increased at an average annual rate of 60.0 percent, while the difference between the parallel market and official exchange rates grew at an average rate of 70.8 percent per year (Appendix 1, Table 12). The Zairianization (nationalization) measures taken in November 1973 also contributed to this situation.[14]

In 1976 new import and foreign exchange restrictions were introduced and the local currency was devalued by 58.4 percent. Despite these efforts economic difficulties mounted. The current account deficit rose from U.S. $592.7 million dollars in 1975 to U.S. $803.2 million in 1976, and the domestic inflation proceeded at much higher rates than the international. The overall government budget deficit reached a record of Z 310.0 million in 1976.

In early 1977 the Zairian government increased the taxes on exports other than those of the Générale Carrière de Mines (GECAMINES) in order to reduce the budget deficit from Z 310.0 million to Z 175.0 million in 1977. The World Bank notes that average taxes on exports other than those of GECAMINES increased significantly in 1977, following introduction of a tax on coffee exports so high that it resulted in substantial underreporting and smuggling.[15]

Despite a sharp drop in imports, the current account deficit in 1977 hit the U.S. $1,451.3 million mark. In addition to declining copper prices, the failure to fully repatriate export earnings, especially from coffee, and a sharp decrease in net capital inflows contributed to this deficit. The 1977 stabilization program has had little or no impact on stabilizing the economy.

In 1978, adjustments were made in key policy areas such as the exchange rate, interest rates, and producer prices—all crucial for stimulating production, exports, diversification, employment of local resources, savings, investment, and repatriation of capital. Measures taken included the devaluation of the zaire in the International Monetary Fund's (IMF's) special drawing rights (SDRs) by 50 percent between November 1, 1978 and January 2, 1979, and by another 25 percent on August 24, 1979; the reorganization of the customs service and public corporations; and efforts to improve tax collection, the allocation of foreign exchange, the administration of the government payroll, and the investment selection process.

These measures were often insufficient or undertaken too late and in an uncoordinated fashion. In fact, 1978 was the worst year of the crisis. Output was about 17 percent below and import volume about 50 percent below 1974 levels, and 20 percent below that of 1970. The budget deficit was equivalent to 9 percent of commercialized GDP. The inflation rate from December 1977 to December 1978 averaged close to 100 percent.

In September 1983 another adjustment program was enacted. A number of far-reaching economic and financial measures were taken, the most important of which were: immediate devaluation of the zaire by 77.5 percent vis-à-vis the SDR; introduction of a transitional dual exchange rate regime, leading to the unification of the two rates in February 1984 and the floating of the rate thereafter; a substantial liberalization and simplification of the exchange and trade system, including a comprehensive revision of customs duties; and decontrol of most prices, including agricultural producer prices, and interest rates.

Although the situation remained difficult in 1983, the GDP expanded by more than

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[14] World Bank, "Zaire Economic Memorandum," Report 2518-ZR, Washington, D.C., October 19, 1979.

[15] World Bank, *Country Study: Zaire*, p. 60.

1 percent in real terms as the result of some recovery in mining production, particularly diamonds and petroleum. The favorable impact of the devaluation on government revenues together with restraint in expenditures helped to reduce the budgetary deficit to about 4 percent of the marketed GDP.[16]

Changes in trade, exchange rate, and other economic policies were erratic, which may have introduced uncertainty not only in trade but also in the economy as a whole. In sum, these policy changes helped shape the structure of incentives for both farm and nonfarm sectors.

Trade Policies

Taxes on imports and exports continue to be the most important trade policy instrument used by the Zairian government. In addition, quantitative restrictions also have been applied. During 1970-78, the share of taxes on international trade and transactions in the Zairian government revenue was relatively high but has been declining. The average annual share of these taxes was about 52.6 percent of the total government budgetary revenue during the 1970-78 period. It represented 63.9 percent of the budgetary revenue in 1970 but dropped to about 28.5 percent in 1978.[17]

However, the decline in the share of import and export taxes in the government revenue was to a large extent due to a growing weakness in tax administration and an increase in tax evasion.[18] The ratio of import taxes to import value declined from 25 percent to 20 percent and that of export taxes to export value from 34 percent to 14 percent during 1970-77 (Table 3).

The fall in the share of export taxes was more pronounced, largely because of GECAMINES' financial problems and the tax rebate the company received. The ratio of export taxes to export value dropped from 32 percent in 1974 to 14 percent in 1977. Average taxes on exports other than those of GECAMINES increased significantly in 1977, following the introduction of a new tax on coffee exports. However, substantial underreporting of coffee exports prevented a greater improvement. The high premium from exporting at the parallel market rate and evading taxation constituted a powerful incentive for smuggling and underinvoicing of coffee exports during 1976-77. For example, in 1976 the declared unit value of exports of the commodity was only 42 percent of the world market price. This implied a loss in foreign exchange earnings due to underinvoicing alone (ignoring smuggling) of about U.S. $175 million. In 1977, when the tax on coffee exports yielded only U.S. $35 million, the loss would have been in the order of U.S. $110 million.[19]

Despite growing weakness in tax administration and an increasing tax evasion, the share of import and export taxes and duties in government budgetary revenue suggests that trade policy was, in addition to exchange rate policy, an important component of economic policies initiated during the period under study.[20]

Price Control and Marketing Arrangements

The Zairian government has always attempted to control all agricultural prices, a policy that was inherited from the colonial period. According to government officials, it helps protect both farmers and consumers against unscrupulous middlemen. Official producer prices of agricultural products have consistently been far below those in

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[16] World Bank, "Zaire Economic Memorandum."

[17] Ibid.

[18] Banque Nationale du Zaire, *Rapport Annuel 1979* (Kinshasa: Banque Nationale du Zaire, 1980).

[19] World Bank, "Zaire Economic Memorandum."

[20] It is important to stress that the use of officially specified tax rates on imports and exports is not very helpful in analyzing the effects of trade regime. The prevailing prices of tradables and nontradables are more useful because the effects of trade, exchange rate, and other price policies are taken into account.

Table 3—Import and export tax performance indicators, 1970 and 1974-77

Tax	1970	1974	1975	1976	1977
Import taxes[a]	0.250	0.226	0.209	0.217	0.206
Export taxes[b]	0.343	0.318	0.222	0.135	0.143
GECAMINES[c]	0.428	0.432	0.264	0.117	0.046
Others[d]	n.a.	0.087	0.146	0.137	0.184

Sources: Unpublished data provided by the Banque du Zaire and Department of Planning, Zaire.
Note: GECAMINES is the Générale Carrière des Mines.

[a] Import tax figures are the ratio of import taxes to import value, based on merchandise imports financed with domestic resources.
[b] Export tax figures are the ratio of export taxes to export value, based on merchandise exports (f.o.b.)
[c] Export tax figures for GECAMINES are the ratio of export taxes paid by GECAMINES to GECAMINES' export earnings.
[d] Export tax figures for others are the ratio of export taxes other than GECAMINES to export earnings generated by others.

either domestic parallel markets or in the world market.

The bulk of marketed food is sold in domestic parallel markets. For instance, in Turumbu area, where producing areas are poorly connected to urban areas in the Zairian Basin, the 1981 average farm-gate price of paddy rice was Z 3,609 per metric ton compared with official prices of Z 800 per metric ton, while that for maize was Z 1,170 per metric ton as opposed to Z 650 per metric ton.[21] An exception is project areas where farmers are administratively compelled to sell their products at official prices. This, among other things, might have contributed to the lack of interest by farmers in government-sponsored projects, which have had little or no impact on the growth of food production. One case in point is the Kanyama-Kasesa maize project in the Shaba province.

The impact of government policies on agricultural exports varies by crop. Cotton, produced exclusively by peasant farmers, has no parallel domestic market outlet. A handful of companies linked with the domestic textile industry collect, process, and market cotton. Almost all peasant farmers are far from the border areas so there is little opportunity for them to smuggle cotton to avoid price controls, taxation, and overvalued exchange rates. The impact of any government policy directly or indirectly designed for cotton will be fully transmitted to producers.

Palm oil is produced in both peasant and plantation agriculture. The parallel domestic market is large. Production by peasants and a significant portion of that from plantations are sold in the domestic parallel market. Smuggling of palm oil to neighboring countries cannot be totally ruled out, but is probably limited. Consequently, the effects of government policies were partially transmitted to producers.

Domestic consumption of coffee, cocoa beans, and natural rubber is limited. Peasant farmers who produce coffee and cocoa beans tend to sell a large share of their output to licensed exporters at the official prices. These exporters, some of whom were producers, are able through smuggling or underreporting to avoid government controls.[22] However, the extent of smuggling and underreporting is hard to determine. A cross-examination of trade and output data from Zairian official and international sources indicates that the amounts involved are fairly small.

Appendix 1, Table 13 shows that Zairian

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[21] Muamba Tshuinza, "Allocation et Utilisation des Ressources dans l'Agriculture Traditionelle: Cas de la Collectivité Rurale Turumbu," Institut Facultaire des Sciences Agronomiques, Yangambi, Zaire, 1983; and information provided by Zaire, Département de l'Agriculture, 1982.
[22] World Bank, *Country Study: Zaire.*

official records of crop exports compare favorably with those from international sources. The most serious problem is not the recording of international transactions but the repatriation of foreign exchange from crop exports. Because most crop exporters have a high degree of leverage, they tend to withhold a substantial amount of foreign exchange earnings outside the country to avoid taxation and the overvalued exchange rate of the domestic currency.[23] This practice, by limiting the availability of foreign exchange, has a negative impact not only on agriculture but also on the rest of the economy. This situation was partly corrected by the policy reform initiated in September 1983. Since then, producers have been free to set their prices. In addition, the power of local authorities to fix prices and to restrict domestic regional trade was suspended. Some restrictions remain on the domestic prices of manufactured goods, which can be adjusted freely but must conform to the "cost of production plus 20 percent" formula and are subject to ex-post price controls. The government continues to intervene directly in price determination only for petroleum products, public utilities, and domestic public transport.[24]

Other Government Policies

The Zairian government expenditure and credit policies were financed by an increasingly large fiscal deficit, particularly during 1971-81. The deficit moved from Z 10.7 million a year during recovery to Z 400.8 million a year during 1971-81. And government consumption rose from Z 150.8 million a year during 1966-70 to Z 1,218.2 million a year during 1971-81 (Appendix 1, Table 14). The government's account expenditures far outstripped its capacity to raise additional revenue, requiring borrowing, largely from the Central Bank.

The Bank of Zaire has expanded domestic credit and the money supply by creating claims on government. During 1966-70, domestic credit and the money supply increased at annual rates of 10.1 percent and 20.2 percent, while claims on government rose at an annual rate of 20.8 percent. However, between 1971 and 1982, when the deficit in the government account increased rapidly, the Bank of Zaire increased the claims on government at an annual rate of 34.2 percent. Domestic credit rose at an annual rate of 33.7 percent and the money supply by 30.2 percent, thus adding fuel to external inflationary influences. Rates of inflation in the economy were very high during this period (Appendix 1, Table 15).

The average share of agriculture in the government budget has never exceeded 10 percent during the postindependence period (Appendix 1, Table 16). This share is small in relation to the size of the population of the farm sector and its contribution to overall output. As a result, the basic infrastructures of agriculture, both hard and soft, have been deteriorating. Much of the existing rural road network has fallen into disrepair, making transportation costly, which has contributed to the declining terms of trade of agricultural products vis-à-vis nonagricultural products in rural areas. Furthermore, efforts to spread output-enhancing technologies among farmers and to improve human resources serving the farm sector (training, research, and extension) have been limited.

Credit policy aimed at both peasant and plantation agriculture is virtually nonexistent. The state-controlled development bank, Société Financière de Développement (SOFIDE), created in 1970, has little room in its policy guidelines for agriculture. Close analysis of the bank policy statement suggests that both the environment and terms under which loans can be obtained exclude most, if not all, peasant farmers, as well as many large farmers.[25] Furthermore, the State Agricultural Credit Bank, created in 1983, seems to have adopted the same policy line.[26]

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[23] Ibid.

[24] Banque Nationale du Zaire, *Rapport Annuel 1975* (Kinshasa: Banque Nationale du Zaire, 1976).

Study Objectives

The effects of all these policies can seldom be determined from statistical records. Nevertheless, this study attempts to analyze the effects of the existing Zairian trade and exchange rate policies on the farm sector. The impact of other economic policies on agriculture is beyond the scope of this study but cannot be ignored.

Several recent studies have shown that trade and exchange rate policies have strong and lasting effects on agriculture through their effects on relative prices and production incentives. These studies indicate that parts of the farm sector have been substantially taxed, both explicitly and implicitly. This growing list of country studies includes those on Nigeria, Argentina, Colombia, and Egypt.[27] Do these conclusions also apply to Zaire?

Trade and exchange rate policies also have serious short- and long-term effects on food consumption through their effects on relative prices of commodities and income distribution. The income loss can be devastating for the poorest groups of the society, which tend to have both large price and income elasticities of demand for high quality foodstuffs.[28] Thus, trade and exchange rate policies are an inextricable part of agricultural production and consumption policies and must be given proportional attention.

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[25] Société Financière de Développement, "Evolution de la Politique d'Intervention de la SOFIDE," Document 315/84/TMV/SAS, Kinshasa, June 20, 1984, p. 19.

[26] Banque du Credit Agricole, "La Politique du Crédit Agricole," paper presented by Deputy Director Ilela, Kinshasa, October 22, 1985.

[27] For Nigeria, see Tshikala B. Tshibaka, "Effects of Nigerian Foreign Trade Policies on the Agricultural Sector, 1955/56-1975/76" (Ph.D. thesis, University of Ibadan, 1979); for Colombia, Jorge García García, *Effects of Exchange Rates and Commercial Policy on Agricultural Incentives in Colombia: 1953-1978,* Research Report 24 (Washington, D.C.: International Food Policy Research Institute, 1981); for Argentina, Domingo Cavallo and Yair Mundlak, *Agriculture and Economic Growth in an Open Economy: The Case of Argentina,* Research Report 36 (Washington, D.C.: International Food Policy Research Institute, 1982); and for Egypt, Grant M. Scobie, *Government Policy and Food Imports: The Case of Wheat in Egypt,* Research Report 29 (Washington, D.C.: International Food Policy Research Institute, 1981).

[28] C. Peter Timmer, "Toward a Nutrition-Oriented Food Policy: The Case of Indonesia," World Bank, Washington, D.C., 1981 (mimeographed).

4

DEFINITIONS AND MEASURES OF AGRICULTURAL PRICE INTERVENTIONS

In this study it is assumed that the Zairian economy is small and open, and that prices, trade regime, and exchange rate policies affect the structure of incentives facing the farm sector and hence agricultural output. This economy produces home, import-competing, and exportable commodities. Home goods include such nontraded farm products as roots, tubers, and plantains. Import-competing goods are made up of farm products such as cereals and industrial consumer goods. The bulk of exportable commodities in Zaire are agricultural and mineral primary products such as coffee, tea, rubber, palm oil, cotton, copper, diamonds, gold, and cobalt. Some are both consumed domestically and exported.

The price data used for this study are severely limited. The Institut National des Statistiques (INS) defines goods on the basis of their origins. Consumer goods are classified as imported, locally produced, and mixed. Imported consumer goods include farm products such as cereals, meat, and dairy products, and nonfarm products such as clothing, shoes, and medicine.

Locally produced consumer goods include both farm and nonfarm products. Among them are home, import-competing, and exportable goods. Among nontradable farm products in the consumer basket are cassava, plantains, and potatoes. Locally produced import-competing commodities include cereals and industrial consumer goods such as clothing, shoes, and soap. Exportable goods are mainly coffee, tea, and palm oil, which compose a small share of the domestic price index of locally produced consumer goods. Most coffee and tea is exported, and the domestic market is quite thin.

Mixed goods include those made from imported and locally produced goods as well as housing and other services. Neither locally produced goods nor mixed goods are a proxy for home goods.

The INS also presents consumer price indexes for food, clothing, housing, and miscellaneous goods. Housing is used in this study as a proxy for home goods since a large share of the cost of housing is made up of home goods such as labor and such building materials as sand, gravel, power, and water. The price of these nontradables is primarily determined by the domestic demand and supply schedules. In addition, the housing price index is based on the Kinshasa metropolitan area, which is taken as representative of the country.

Producer price data also are limited. Exportable crops are generally marketed through official and parallel channels. Crops such as seed cotton that are produced exclusively by peasant farmers have no parallel market. The only outlet for these farmers is the official marketing channels controlled by domestic companies handling the processing of seed cotton. Because most cotton-growing areas are not near the border of the country, smuggling is difficult. In addition, the government has continued to fix the producer price of seed cotton. This exception to the liberalization measures of September 1983 reflects the fact that the domestic cotton market is made up of many producers and few buyers. Therefore, cotton growers continue to bear the full impact of taxation, overvalued exchange rates, and price controls.

To assess the effective impact of the trade regime, exchange rate policy, and other price-distorting policy measures, the weighted average prices paid to palm oil and coffee producers should be computed. This is difficult because the shares of the output of each crop sold in different markets are not known. It is assumed that the prices paid to farmers in local markets (domestic parallel markets) are the most relevant for analysis. All producers have access to domestic parallel markets, whereas official and parallel export markets are limited to a small number of producers who have a high degree of leverage. These prices can be related to the world prices by Cassel's law, or the law of one price, as follows:

$$P_x = P_x^* E_o(1 - t_x)(1 - d_x) = P_x^* E_o T_x, \qquad (1)$$

where

P_x = price paid to the exportable crop producer in domestic currency,

P_x^* = exportable crop world price in foreign exchange,

E_o = official exchange rate expressed as a number of units of domestic currency per one unit of foreign exchange,

t_x = export tax,

d_x = domestic parallel market price distortion, and

T_x = price-distorting policy adjustment factor for exports.

The Zairian government does not provide a subsidy to crop exporters.

Most of the output of importable food commodities such as rice and maize is sold in the domestic parallel market, but until September 1983 a limited fraction was sold through officially controlled marketing channels. This was the case for paddy and maize sold to mill owners. Data on imports are available only for crops brought in through official channels. However, it is highly probable that there was underreporting and smuggling. A parallel trade between northern Zambia and the southern part of Shaba Province in Zaire involving maize, flour, sugar, dairy products, eggs, chicken, and other items has been active for many years. It should be emphasized that most food imports, including those going through official channels, continue to be sold in the domestic parallel market. The price paid to farmers in this market is the most relevant and is related to the world price as follows:

$$P_m = P_m^* E_o(1 + t_m)(1 + d_m) = P_m^* E_o T_m, \qquad (2)$$

where

P_m = price paid to importable crop producers in domestic currency,

P_m^* = importable crop world price in foreign exchange,

t_m = import tariff rate,

d_m = domestic parallel market price distortion, and

T_m = price-distorting policy adjustment factor for imports.

Introduction of the producer price of nontradables makes the set of prices complete. The structure of relative prices between traded and nontraded commodities is represented by

$$P_x/P_h = (E_o/P_h)P_x^*(1 - t_x)(1 - d_x), \qquad (3)$$

$$P_m/P_h = (E_o/P_h)P_m^* \times (1 + t_m)(1 + d_m), \text{ and} \qquad (4)$$

$$P_m/P_x = (P_m^*/P_x^*)(1 + t_m) \times (1 + d_m)/(1 - t_x)(1 - d_x). \qquad (5)$$

Expressions (3) and (4) show that the real exchange rate (E_o/P_h) plays a crucial role in both export-oriented and import-competing farm and nonfarm activities. The real exchange rate provides a measure of the relative prices of importables and exportables to home goods in the economy.[29] Expression (5) implies that the domestic price of importables relative to exportables is a function of world prices, trade regime, and other price policy measures.

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[29] For theoretical details, see Rudiger Dornbusch, "Tariffs and Nontraded Goods," *Journal of International Economics* 4 (May 1974): 177-185; Larry A. Sjaastad, "Commercial Policy, True Tariffs, and Relative Prices," in *Current Issues in Commercial Policy and Diplomacy*, ed. J. Black and B. Hindley (New York: St. Martin's Press, 1980); and Larry A. Sjaastad and K. W. Clements, "The Incidence of Protection: Theory and Measurement," paper presented at the Conference on the Free Trade Movement in Latin America, Hamburg, June 21-24, 1981.

The lack of data on individual policy variables (t_x, t_m, d_x, and d_m) for Zaire does not allow for a detailed description of how domestic prices were affected over time by these policy variables. Even though the economic history of Zaire gives useful indications of some discrete periods during which severe trade regimes, both in terms of import and export policies, prevailed in the economy, the emphasis as far as describing the movement of domestic prices both in absolute and relative terms will be limited to analyzing the effect of exchange rates on the movement of these prices over time.

Price Intervention and Farm Protection

The extent to which agricultural producer prices differ from corresponding world prices permits inferences about how much domestic agricultural production is protected from foreign competition. One parameter usually considered for this purpose is the effective rate of protection.[30] Where data are limited, as in Zaire, two ratios—the nominal rate of protection and the implicit rate of taxation—computed from price data are generally used as crude measures of protection.

The difference between agricultural producer prices and world prices, expressed as a percentage of world prices (in domestic currency at the official exchange rate) has been widely used in the literature as a nominal rate of protection. This ratio shows the extent to which prices received by farmers have been kept below or above world prices through price-distorting policies. It also indicates the size of the direct taxation of a commodity relative to the world price.

A second crude measure currently used is the implicit rate of taxation or subsidy.[31] This indicator is measured as the wedge between the average price received by local producers and the relevant world price, c.i.f. or f.o.b., depending on whether the commodity is imported or exported, and taking account of an exchange rate adjustment based on purchasing power parity (Appendix 1, Table 17).

The producer wedge is given by:

$$\Delta P = (P^* E_0 FPI/CPI) - (P/CPI), \qquad (6)$$

where ΔP stands for the producer price wedge in local currency, P^* the world price in foreign exchange, P the local producer price, FPI the consumer price index of Zaire's principal trading partners (the United States, the European Community, and Japan), and CPI the domestic consumer price index. The implicit rate of taxation or subsidy of an individual product would be:

$$\Delta P/(P^* E_0 FPI/CPI) = 1 - (P/P^* E_0 FPI). \qquad (7)$$

This measure of protection is used in this study instead of the nominal rate of protection to assess the extent to which the farm sector is shielded against foreign competition. The implicit rate of taxation as a measure of protection is more preferable than the nominal rate of protection because it takes account of domestic and world inflation.

However, both measures present a number of limitations. They do not account for the effect of commercial policy on the real exchange rate or the changes in terms of trade. They disregard quality differences between the brands of the commodity whose prices are compared. The concepts can only be applied to tradables, hence a whole sector of the economy producing nontradables is not considered. Home goods such as tubers, roots, and plantains constitute an important component of the food basket in Zaire, both in production and consumption. The concepts measure the effects of price intervention only for prices of tradable output and ignore the input side. As a result, they are not adequate measures of the effects of price intervention that occur in both output and input markets. Some of these inputs are used in the production of nontradables. A more appropriate indicator of protection is the effective rate of protection, which cannot be computed at this time because of data limitations.

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[30] The effective rate of protection is defined as the value added at the domestic price less the value added at the world price divided by the value added at the world price.

[31] Scobie, *Government Policy and Food Imports in Egypt.*

Despite these limitations, the estimates of implicit rates of protection of the Zairian farm sector are computed and presented in Table 4. The period 1971-82 was marked by the direct intervention of the IMF into the Zairian economy during 1975-79. This was characterized by frequent policy adjustments. For this discussion, 1971-74 and 1980-82 are referred to as the pre- and post-IMF intervention subperiods.

Six crops are considered that were subject to government treatment during the entire period. Three were import-competing crops. Maize was taxed about 2.3 percent during 1971-74 and 27.3 percent during 1980-82 but was protected only 1.1 percent during 1975-79. For all of 1971-82, maize growers sustained an average direct tax of about 12.4 percent per year. In contrast, rice was protected during the entire period. The average direct rate of subsidy to producers was about 32.5 percent during 1971-82. Groundnuts were consistently taxed during the entire period at an average rate of about 38.0 percent. Of the three major food crops, rice was protected, while maize and groundnuts were discriminated against. Groundnut producers bore the highest burden of direct taxation.

For export crops, palm oil production was subsidized at an average annual rate of 51.1 percent during 1971-74 and about 32.5 percent during 1975-79, but was taxed only 16.3 percent during 1980- 82. Coffee and cotton were directly taxed during the entire period at average annual rates of 55.1 and 87.7 percent.

The pattern of rates of direct taxation clearly indicate that three major policy reforms occurred during 1971-82. From 1971 to 1974, before IMF intervention, cotton, groundnuts, coffee, and maize were taxed but rice and palm oil were not. Figure 1 (drawn from Appendix 1, Table 18) shows that in the aggregate, exportable crops (coffee, palm oil, and cotton) were taxed slightly more than importable crops but less often.

Table 4—Implicit rates of protection of farm products, five-year averages, 1971-82

Traded Commodity	1971-74	1975-79	1980-82
		(percent)	
Import-competing			
Maize[a]	-2.3	1.1	-27.3
Rice[a]	11.7	65.3	52.3
Groundnuts	-55.9	-39.4	-22.1
Exportable			
Coffee	-40.6	-54.8	-58.2
Palm oil	51.1	32.5	-16.3
Cotton	-82.7	-86.9	-93.0

Sources: Computed from basic data provided by the government of Zaire, particularly the Institut National des Statistiques, Banque Nationale du Zaire, and the Département de l'Agriculture. Other basic data were obtained from the World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1984); and the International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984).

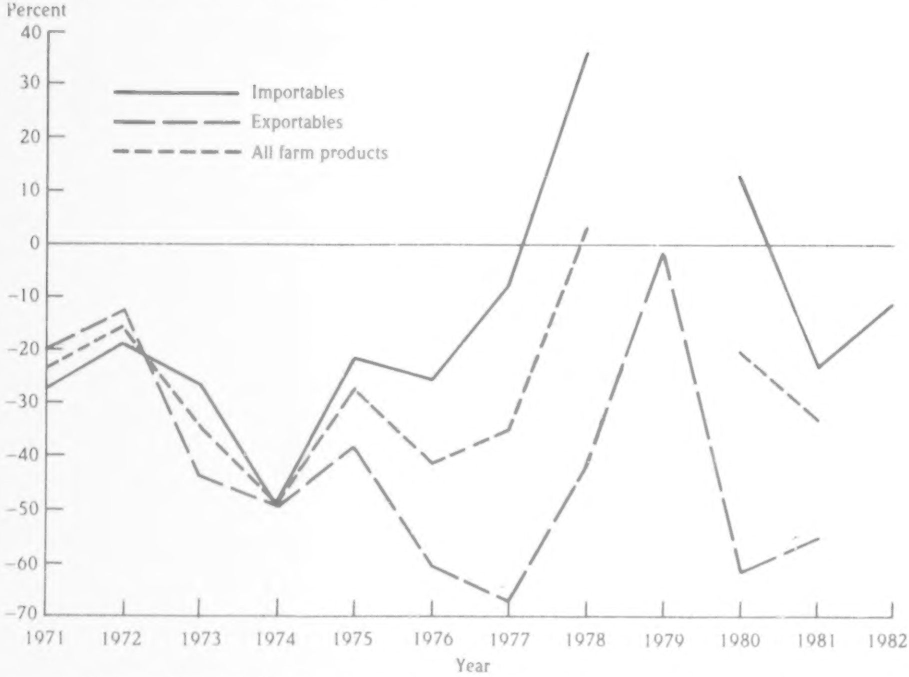
Notes: All the numbers were multiplied by -1. Positive numbers are implicit rates of subsidy. Negative numbers are implicit rates of taxation.

[a] Maize and rice price data for 1979 are not available.

Direct IMF intervention in the economy in 1975-79 coincided with a reversal in government policy. Rice was highly protected, the level of direct taxation of maize production was maintained, and the tax burden on groundnuts was significantly reduced. Rates of taxation of coffee and cotton were increased, while the subsidy rate for palm oil was lowered. Export crops as a group were discriminated against even more during 1975-79 than during 1971-74. Importable food crops were subsidized during 1975-79. During 1980-82, the post-IMF intervention subperiod, the rate of taxation of the export crops was increased, while food crops were no longer subsidized but taxed (Appendix 1, Table 19).

The pattern of government support discriminated against export crops more than food crops during 1971-82. Compared to 1966-70, when output of both groups grew

Figure 1—Implicit rates of protection of importables, exportables, and all farm products, 1971-82



Sources: Computed from basic data provided by the government of Zaire, particularly the Institut National des Statistiques, Banque Nationale du Zaire, and the Département de l'Agriculture. Other basic data were obtained from the World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1984); and the International Monetary Fund, *International Financial Statistics, 1983* (Washington, D.C.: IMF, 1984).

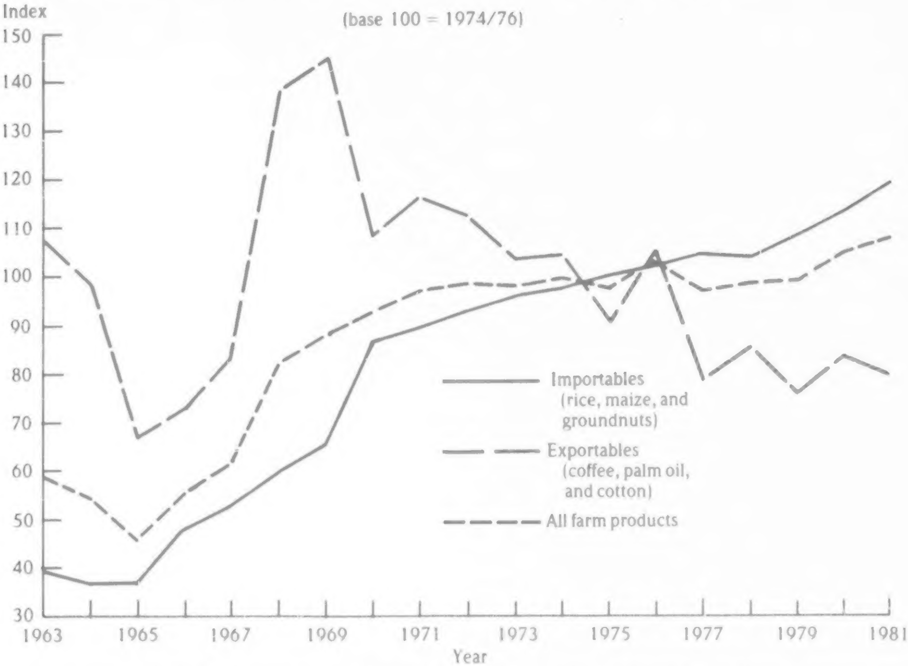
rapidly, output of importable crops grew at a slower pace in 1971-82, while export crop output fell (see Figure 2, derived from Appendix 1, Table 20). Expansion of the total output of the six major crops was slow. Figure 2 also reveals impressive growth in the output of selected export crops during 1965-69. This impressive growth could be ascribed to the rehabilitation of the economic infrastructure and activity in Haut-Zaire and Kivu, the major export-crop producing provinces, which were most affected by the civil war.

Domestic Price Movements and Exchange Rate Policy

Two types of price movements are considered here. First, the movements of domestic prices for home, exportable, and importable goods and the exchange rate are described. Second, the way domestic prices of exportables and importables relative to home goods move with the real exchange rate over time is considered.

Figure 3 (drawn from Appendix 1, Table 21) depicts the movements of the domestic price indexes for housing (P_h), exportables (P_x), importables (P_m), and the official exchange rate (E_o). The general consumer price index (CPI) has been added in order to indicate how the real income of producers of different commodities might have been affected. Figure 3 shows that during 1975-82, the domestic price of exportables did not keep pace with the rate of domestic inflation as did the domestic producer prices for im-

Figure 2—Output indexes for major traded farm crops, 1963-81



Sources: Computed from basic data provided by the government of Zaire, particularly the Institut National des Statistiques, Banque Nationale du Zaire, and the Département de l'Agriculture. Other basic data were obtained from the World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1934); and the International Monetary Fund, *International Financial Statistics, 1983* (Washington, D.C.: IMF, 1984).

portables and home goods; this suggests a decline in real income from exportables.

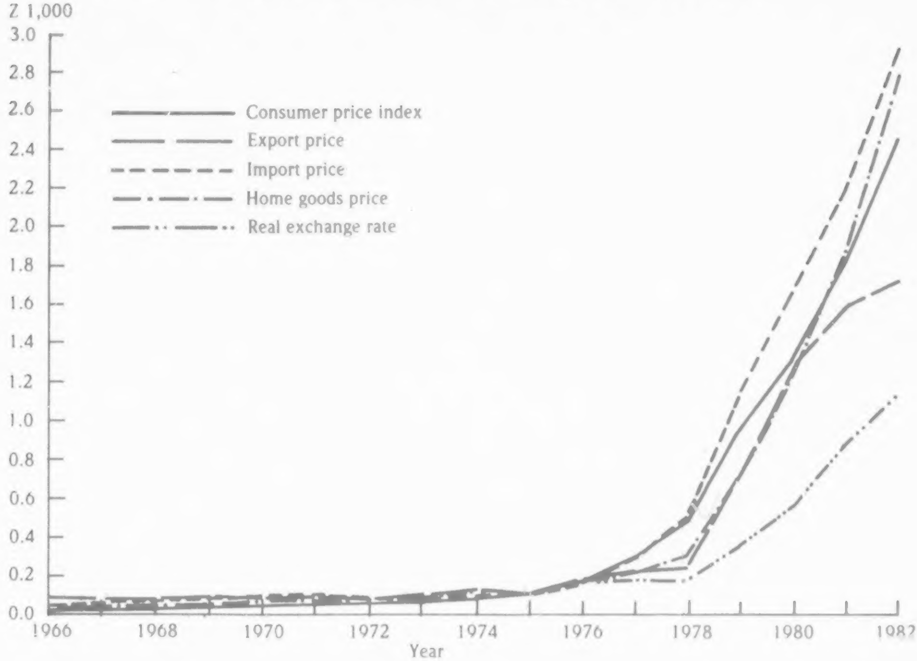
The various adjustment programs implemented with the help of IMF during 1975-79 led to a high rate of inflation. All domestic prices increased at much higher rates than during the previous subperiod. However, the domestic price of exportables increased at a lower rate than other domestic prices, and the official rate of exchange was no longer pegged. The domestic currency was devalued at an average annual rate of 34.3 percent.

From 1980, direct intervention by the IMF apparently ceased. Different domestic prices continued to increase, but at lower rates than in 1975-79, while the rate of devaluation of the domestic currency was higher. However, during the entire period being investigated, domestic currency was being devalued at a lower rate than the increase in the domestic price of nontradables. Table 5 suggests that the trend in the real exchange rate declined. This implies that the relative profitability of exportables was falling.

Importables, followed by home goods, were more profitable than exportables during 1975-79, a period characterized by many policy adjustments initiated with the help of the IMF. The real exchange rate declined at an annual average rate of 8.3 percent during 1975-79 as opposed to annual increases of 4.8 percent during 1966-70 and 0.8 percent in 1971-74.

The real exchange rate improved significantly and increased at a rate of 5.3 percent per year during 1980-82 compared to an

Figure 3—Domestic prices and official exchange rates, 1966-82



Sources: Zaire, Institut National des Statistiques, *Annuaires Statistiques* (Kinshasa, INS, various years); Banque Nationale du Zaire, *Rapport Annuel* (Kinshasa: Banque Nationale du Zaire, various years); and International Monetary Fund, *International Financial Statistics, 1983* (Washington, D.C.: IMF, 1984).

8.3 percent decline during 1975-79. The domestic prices of exportables and importables relative to home goods declined by 13.5 percent and 12.8 percent per year respectively. Figure 4 (derived from Appendix 1, Table 22) shows that the real exchange rate was declining with the domestic price of exportables relative to home goods as opposed to importables.

The situation suggests that importables were increasingly protected relative to exportables. The declining real exchange rate implies that exportables were becoming cheaper to domestic consumers relative to home goods and less profitable for producers. Since exportable commodities are in excess supply in the domestic market and therefore need to be exported, a decline in domestic price relative to home goods will have a limited impact on domestic demand. If both the real exchange rate and the domestic price of exportables continue to decline until sufficient production resources have been shifted to other activities to reduce output, an equilibrium position in the domestic market would be reached. In this case the commodities would no longer be exportable but nontradable. This may be the situation for palm oil. However, if equilibrium is not maintained and excess demand occurs in the domestic market, the once exportable crop could become importable. This is the situation for cotton.

In the medium and long run, however, change in the amount of a given commodity produced not only depends on the change in the relative domestic price of that commodity but also on changes in its domestic and supply schedules, as well as in shift parameters. For instance, if the domestic

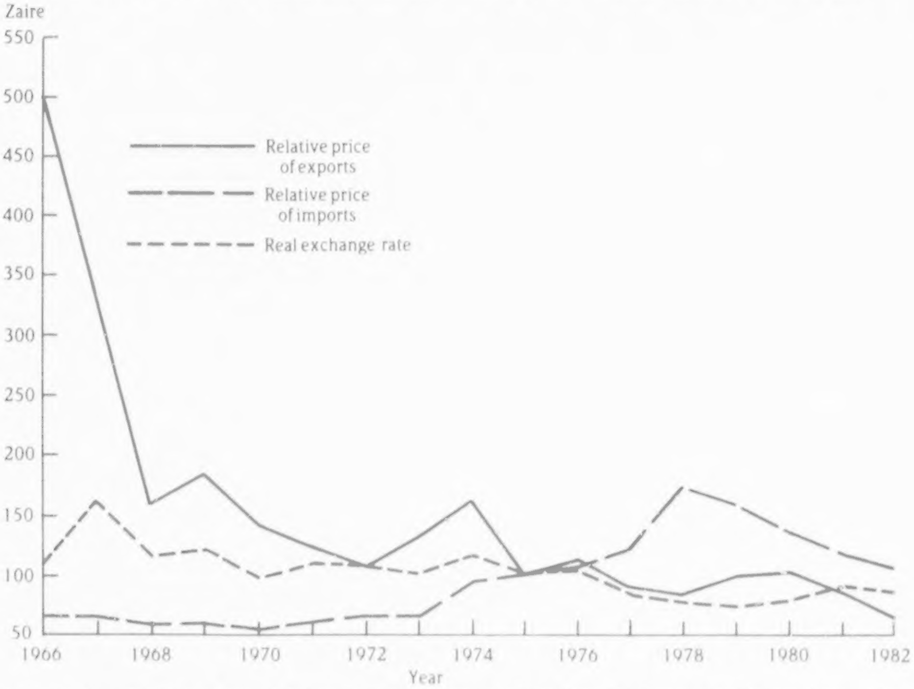
Table 5—Average domestic relative prices and real exchange rates, 1966-82

Period	Relative Price Index for Exportables (P_x/P_h)	Relative Price Index for Importables (P_m/P_h)	Real Exchange Rate Index ($([FPI] E_o/P_h)$)
1966-70	264.6	59.9	120.6
1971-74	130.2	70.8	108.1
1975-79	96.9	132.1	87.2
1980-82	83.5	118.6	84.6

Sources: Computed from basic data provided by the government of Zaire, particularly the Institut National des Statistiques, Banque Nationale du Zaire, and the Département de l'Agriculture. Other basic data were obtained from the World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1984); and the International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984).

Notes: P_x stands for the index of the domestic price of exportables, P_m for the index of the domestic price of importables, P_h for the index of the domestic price of nontradables, E_o for the index of the official exchange rate (defined as the number of units of domestic currency per U.S. $1.00), and FPI for the consumer price index for Zaire's principal trading partners (the United States, the European Community, and Japan).

Figure 4—Domestic relative prices and the real exchange rate, 1966-82



Sources: Computed from basic data provided by the government of Zaire, particularly the Institut National des Statistiques, Banque Nationale du Zaire, and the Département de l'Agriculture. Other basic data were obtained from the World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1984); and the International Monetary Fund, *International Financial Statistics, 1983* (Washington, D.C.: IMF, 1984).

demand for a commodity rises significantly as a result of rapidly growing population while its supply remains inelastic with respect to its own price, and technological changes in its production are negligible, a rising domestic relative price would not be enough to maintain the commodity on the export list in the medium and long run. The country may eventually find itself a net importer.

A fall in the real exchange rate makes importables cheaper relative to home goods for domestic consumers and less profitable for producers. This creates an excess demand for importables that tends to push up the domestic price. Thus, the real exchange rate may fall over time, whereas the domestic price of importables relative to home goods may continue to rise. Figure 4 illustrates this situation.

The reverse situation may occur. If the real exchange rate increases, importables become expensive relative to home goods for consumers and more profitable for producers. The resulting excess supply tends to push the domestic price of importables downward. In this case the domestic price of importables would decline relative to home goods. However, this situation would quickly change. Resources may move away from importables, so that production would be curtailed, and equilibrium in the domestic market would be achieved. The importables would then become nontraded goods. A second possibility is that government may intervene to avoid further cuts in the domestic price of importables by encouraging the export of the surplus. Then the importables would become exportables.

This discussion shows the centrality of the real exchange rate in moving a product from being an exportable to a home good, and finally to an importable. It explains at least partly the move of Zaire from self-sufficiency in maize and rice at the eve of independence to net importer. The country is no longer an exporter of groundnut oil and cotton but an importer. And it has moved from a position of the second-largest palm oil exporter in the world to that of self-sufficiency. If no substantial policy changes are made, Zaire will, in the near future, be on the list of palm oil importers.

Table 6—Rate of change of real exchange rates, growth rates of farm and gross domestic output, 1966-82

Rate	Recovery Period, 1966-70	Post-Recovery Period, 1971-82
	(percent)	
Rate of change of the real exchange rate	0.8	−0.6
Growth rate		
Major staple food crops	4.0	1.6
Major export crops	8.9	0.8
Gross domestic output	6.4	0.4

Sources: Derived from data in International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984); World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1984); and Food and Agriculture Organization of the United Nations, *FAO Production Yearbook*, various issues (Rome: FAO, various years).

Notes: The major staple food crops are maize, rice, sorghum, millet, groundnuts, cassava, sweet potatoes, bananas, and plantains. Major export crops are coffee, palm oil, palm kernels, natural rubber, cotton, and cocoa beans.

The usefulness of the real exchange rate as a policy variable that could easily be monitored by the government is unquestionable. Table 6 shows that farming and overall economic activity in Zaire declined with the real exchange rate during 1966-82. This seems to suggest that to achieve acceptable growth in the economy, the real exchange rate—among other variables—needs to be controlled by the government through suitable fiscal, monetary, income, and other economic policies. The aim would be to maintain the real exchange rate at the level that yielded encouraging performances of the farm and other sectors of the economy in the past.

5

ESTIMATING THE INCIDENCE OF TRADE AND EXCHANGE RATE POLICIES ON RELATIVE AGRICULTURAL PRICES

The basic postulate of the analysis in this chapter is that trade, exchange rate, and other price policies influence the structure of relative prices facing different sectors of the economy and that this determines the allocation of resources within and among sectors. The model developed by Sjaastad helps estimate the incidence of these policies on the structure of relative prices.[32] This analytical framework is being used in a rapidly growing list of trade studies and has been applied to agriculture.[33] Trade, exchange rate, and other price policy variables enter the model through the assumption that excess demand for importables, excess supply for exportables, and excess demand for home goods depend only on relative prices (P_m/P_h, P_x/P_h) and real income.

A distortion, say an import tariff, raises the domestic price to consumers of importables relative to exportables and home goods and makes them relatively more profitable for producers (see Appendix 1, Table 23). This induces consumers to shift their demand from importables to exportables and home goods. It also induces the transfer of resources away from the production of exportable and home goods, which leads to increased domestic production of importables. These processes create a reduction in supply of home goods and an increase in demand. This places upward pressure on the price of nontradables until prices increase to the point at which a new equilibrium is achieved in the home goods market.

The final equilibrium position is such that the import tariff has increased the domestic price of importables relative to home goods, but this increase is less than the full amount of the tariff because the nominal price of nontradables has also risen somewhat.

Instead assume that an export subsidy is given to exportable goods producers. This will increase the domestic price of exportables relative to importables and nontradables. This leads to a contraction of the domestic demand for exportables in favor of importables and nontradables. It also leads to increased production of exportables as resources move away from importables and home goods toward exportables. In the nontradable goods sectors, these processes create a contraction in supply and an expansion in demand, placing upward pressure on the price of home goods until a new supply and demand equilibrium is reached. In the last instance, the price of exportables has increased as well as that of home goods but not to the full extent of the export subsidy.

To formalize these relationships, assume that world prices of tradables are constant, and that the import tariff applied is larger than the export subsidy. Under these assumptions, the equilibrium price in the domestic home goods market will rise by an amount that is less than the import tariff but greater than the export subsidy. Sjaastad has shown that:[34]

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[32] Sjaastad, "Commercial Policy, True Tariffs, and Relative Prices."

[33] García, *Effects of Exchange Rates and Commercial Policy;* Romeo M. Bautista, "Effects of Trade and Exchange Rate Policies on Export Production Incentives in Philippine Agriculture," International Food Policy Research Institute, Washington, D.C., 1985 (mimeographed).

[34] Sjaastad, "Commercial Policy, True Tariffs, and Relative Prices."

$$d_h = s_x + \omega(t_m - s_x), \qquad (8)$$

where

d_h = increase in the price of nontradables,
s_x = export subsidy,
t_m = import tariff, and
ω = incidence parameter.

The nominal distortion introduced in the economy by trade policy is measured as the difference $(t_m - s_x)$, which decomposes into two terms:

$$t_m - s_x = (t_m - d_h) + (d_h - s_x). \qquad (9)$$

Expression (9) is interpreted as follows: producers in the importable goods sector receive an implicit subsidy given by $(t_m - d_h)$ rather than the nominal import tariff (t_m), whereas producers in the export sector are implicitly taxed to the extent of $(d_h - s_x)$. The size of the total distortion $(t_m - s_x)$ can be determined by policymakers through trade policies, but they cannot decide how this distortion is to be allocated between importables and exportables. This distribution of the distortion between tradable sectors is solely determined by their substitution relationships portrayed by the level of the incidence parameter. For example, if the relationship between home goods and exportables is weak in consumption or production, the value of the incidence parameter will be high. Then from equations (8) and (9) one can see that the implicit subsidy given to producers in the import-competing sector $(t_m - d_h)$ will be much smaller then the implicit tax on producers of exportables $(d_h - s_x)$.

In the case of Zaire, some price distortions due to other price policy measures, along with the export tax, have driven down the producer price for exportables relative to importables and home goods. The demand for exportables in the domestic market rises while production contracts as resources move toward importables and home goods. In the home goods sector, these processes create an expansion in supply and a contraction in demand, placing downward pressure on the price of home goods. This price pressure continues until a new supply and demand equilibrium is achieved at the point where the price of home goods has declined but not to the full extent of the total distortion imposed on export price. These considerations are typical of the Zairian situation.

The above results suggest that the protection of one sector—say, the importable goods sector—causes damage to other sectors. The extent of this damage depends on the degree of substitution between sectors in production and demand. An import tariff meant to protect an import-competing sector may end up being partly or totally transformed into a tax on exportables. An export subsidy may become partly or totally an import subsidy.

It follows from these theoretical developments that a critical parameter to estimate is ω, the incidence parameter. The derivation of this parameter is carried out within the framework of a three-sector model in which general equilibrium is implied by either trade account or equilibrium in the home goods market. It is analytically convenient to use the general equilibrium market clearing properties of the nontradable goods sector to determine the equilibrium price relationship between importables, exportables, and home goods.[35]

Equilibrium in the home goods sector implies that the demand and supply of home goods (D_h and S_h) are equal. Thus,

$$D_h = S_h, \qquad (10)$$

where the home goods demand and supply are expressed as

$$D_h = D_h(P_m/P_h, P_x/P_h, Y), \text{ and} \qquad (11)$$

$$S_h = S_h(P_m/P_h, P_x/P_h, Z, t), \qquad (12)$$

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[35] Ibid.

where

P_m = domestic price of importables,
P_x = domestic price of exportables,
P_h = domestic price of home goods,
Y = real income,
Z = vector of productive resources, and
t = technology.

Y, Z, and t can be held constant for the purpose of examining the comparative static properties of the model where the primary interest is the movement of relative prices. Differentiating equations (11) and (12) yields:

$$D_h = \alpha_m(\hat{P}_m - \hat{P}_h) + \alpha_x(\hat{P}_x - \hat{P}_h), \text{ and} \qquad (13)$$

$$S_h = \beta_m(\hat{P}_m - \hat{P}_h) + \beta_x(\hat{P}_x - \hat{P}_h), \qquad (14)$$

where α_m and α_x stand for elasticities of demand for home goods with respect to the relative prices of importables and exportables; β_m and β_x are the corresponding supply elasticities; and the hat (ˆ) over the variables indicates a percentage change.

Equating (13) and (14) gives

$$\gamma_m(\hat{P}_m - \hat{P}_h) + \gamma_x(\hat{P}_x - \hat{P}_h) = 0. \qquad (15)$$

where $\gamma_m = \alpha_m - \beta_m$ and $\gamma_m = \alpha_x - \beta_x$. Multiplying both sides of expression (15) by -1 gives

$$\gamma_m(\hat{P}_m - \hat{P}_h) + \gamma_x(\hat{P}_h - \hat{P}_x) = 0. \qquad (16)$$

The expression (16) can be rearranged, after adding and subtracting $\gamma_m\hat{P}_x$, as follows:

$$\gamma_m(\hat{P}_h - \hat{P}_x) + \gamma_m(\hat{P}_x - \hat{P}_m) + \gamma_x(\hat{P}_h - \hat{P}_x) = 0, \qquad (17)$$

so that

$$(\hat{P}_h - \hat{P}_x) = \omega(\hat{P}_m - \hat{P}_x), \qquad (18)$$

where ω, which equals $\gamma_m/(\gamma_m + \gamma_x)$ (with $0 < \omega < 1$), is the incidence parameter that determines the induced change in the domestic price of home goods relative to exportables brought about by the change in the domestic price of importables relative to exportables from trade, exchange rate, and other price policy measures. Equation (18) is then rewritten as

$$d\ln(P_h/P_x) = \omega d\ln(P_m/P_x), \qquad (19)$$

where dln stands for the derivative of the natural logarithm of the variables in brackets. Assuming constant ω, after integration of equation (19), gives

$$\ln(P_h/P_x) = c + \omega\ln(P_m/P_x), \qquad (20)$$

where equation (20) is the basic equation for estimating the numerical value of the incidence parameter ω. Equation (20) may be disaggregated as necessary to take account of several exportable and importable goods subsectors.[36]

It is clear that trade variables (t_m, t_x), the real exchange rate (E_o/P_h), foreign prices (P^*_m, P^*_x), and other price policy variables $(d_{m,dx})$ are brought into the picture in this construction expressing P_h/P_x and P_m/P_x as

$$P_h/P_x = (P_h/E_o)/[P^*_x(1 - t_x)(1 - d_x)] \text{ and} \qquad (21)$$

$$P_m/P_x = (P^*_m/P^*_x) \times [(1 + t_m)(1 + d_m)/(1 - t_x)(1 - d_x)] = (P^*_m/P^*_x)(T_m/T_x). \qquad (22)$$

The above theoretical development shows how trade, exchange rate, and other price policies affect the structure of relative prices facing the economy through their effect on the domestic prices of tradables.

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[36] García, *Effects of Exchange Rates and Commercial Policy.*

Estimation of the Incidence Parameter and the Extent of Taxation

The model for estimating the incidence of commercial and exchange rate policies on the structure of relative prices was based on the assumption that real income, productive capacity (measured by given stocks of capital, labor, and technology), and international prices are constant. In addition, the model assumes that the balance of trade is in equilibrium. Historical data invalidate these assumptions and call for the inclusion of these variables in the regression equations. Hence, real income (Y) as measured by gross domestic product and the balance of trade (BOT) are included as explanatory variables. Finally, government capital expenditures (GIE) and trend (T) are included separately in the model as proxies for change in productive capacity of the economy (exchange in capital stock and technology).

Annual data for 1970-82 are used (see Appendix 1, Table 24). Ordinary least squares techniques performed on small sample data gave error terms that were significantly autocorrelated. The estimation method described by Gallant and Goebel, which Harvey called the two-step full transform method, was used to correct for first autocorrelation.[37] Estimates made from small samples are more efficient when this method is used than with the traditional Cochrane-Orcutt iteration technique. The regression equations are presented in Table 7. The estimates of the incidence parameters are produced for total exports (x), agricultural exports (xa), and nonagricultural exports (nxa). Two variables, the price indexes for housing and cassava, are used as proxies for home goods.

The regression equations using the price index for cassava produced unacceptable results and were rejected. This situation may arise because cassava, a nontradable crop, statistically acts like an importable crop in both production and consumption. As a substitute in consumption, the domestic price of cassava is indirectly affected by the impact of world market conditions on the domestic market of importable crops. That is, if the world price of grain rises, the domestic demand for grains will decline, while that of cassava—a substitute crop—will also rise.

The statistical characteristics for all the regression results are good. The explanatory variables included in the equations explain not less than 90 percent of the total variations in the dependent variables.

The regression coefficients for BOT, GIE, and T are not significant. The estimated coefficients for Y are significant and negative, implying that a positive growth of real income leads, other things being equal, to a decrease in the domestic price of home goods relative to exportables. The explanation is not obvious. The regression coefficient for the price of nonagricultural exports relative to agricultural exports is positive and significant. This implies that the domestic price of home goods is positively and significantly affected by changes in prices of nonagricultural exports relative to agricultural exports.

The estimated numerical values for the incidence parameters are significant for all the categories of tradables and home goods in Table 7. For total exports, estimate of the incidence parameter is about 0.52. In practical terms, the domestic price of home goods relative to exportables would increase by 0.52 percent as a result of a 1 percent rise in the domestic price of importables relative to exportables.

The implication is that a price distortion (from tariffs, quantitative restrictions, domestic pricing and marketing policies, and so forth) that leads to an increase in the domestic price of importables falls partly as a tax on producers of exportables. To illustrate, let us assume that the domestic price of importables has increased 10 percent as a result of the above policies. This represents a tax on exportables of about 5.2 percent. This suggests that, in Zaire, no less than 50 percent of the burden associated

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[37] R. A. Gallant and J. J. Goebel, "Nonlinear Regression with Autocorrelated Errors," *Journal of American Statistical Association* 71 (December 1976): 961-967; and A. C. Harvey, *The Econometric Analysis of Time Series* (New York: Halsted Press, 1981), pp. 182-202.

Table 7—Regression results for total, agricultural, and nonagricultural exports, 1970-82

Independent Variable	Dependent Variable All Exports $\ln P_h/P_x$	 Agricultural Exports $\ln P_h/P_{xa}$	 Nonagricultural Exports $\ln P_h/P_{nxa}$
Constant	9.079 (3.493)[a]	7.850 (2.655)[b]	7.984 (2.598)[b]
$\ln P_m/P_x$	0.522 (5.017)[a]	...	...
$\ln P_m/P_{xa}$	...	0.407 (3.369)[b]	...
$\ln P_{nxa}/P_{xa}$	...	0.736 (4.606)[a]	... ...
$\ln P_m/P_{nxa}$	...	...	0.721 (2.234)[b]
$\ln P_{xa}/P_{nxa}$	...	...	0.172 (0.831)
$\ln Y$	−2.065 (−3.461)[a]	−1.858 (−2.736)[b]	−1.671 (−2.453)[b]
$\ln GIE$	0.087 (0.865)	0.143 (1.305)	...
BOT	−0.000 (−0.447)	0.004 (1.772)	0.001 (0.365)
T	...	...	−0.029 (−1.017)
R^2	0.904	0.926	0.949
Degrees of freedom	5	4	4

Notes: P_h stands for the index of the price of home goods, P_m for the index of the price of imports, and P_x for the index of the price of exports. P_{xa} stands for the index of the price of agricultural exports; P_{na}, for the index of price of nonagricultural exports. These are mostly minerals, with copper the leading commodity. Y stands for real gross domestic product, GIE for real government capital expenditures, and BOT for the balance of trade. The numbers in parentheses are t-values.

[a] This is significant at the 1 percent level.

[b] This is significant at the 5 percent level.

with the protection of importables is borne by exportables. In addition, if exportables are directly taxed—say, at 15.0 percent—then the total tax rate would be 20.2 percent. In the case of Zaire, however, it is hard to compute the rate of total taxation of exportables because the official rates of import tariffs and export taxes do not reflect smuggling, underreporting, and underinvoicing. The extent of these practices indicates the restrictiveness of the trade regime.

The disaggregation of exportables yields the following estimates of the incidence parameters: 0.407 for agricultural exports and 0.721 for nonagricultural exports. In other words the domestic price of home goods relative to agricultural and nonagricultural exportables would increase by 0.41 and 0.72 percent as a result of a 1 percent rise in the domestic price of importables relative to agricultural and nonagricultural exportables respectively. A comparison of these estimates of the incidence parameter suggests that the largest share of the burden associated with the protection of importables is borne by nonagricultural exports, largely mining.

Implications for Farm Output

The above analysis clearly suggests that trade, exchange rate, and other price policies initiated in Zaire during the period under study have had far-reaching negative effects on exportable goods production. These policies have also tended to reduce substantially the incentive to produce exportables relative to home goods.

Table 1 suggests that during 1971-82, trade, exchange rate, and other price-distorting policies were mostly inward-looking. The output growth rate of importable crops (cereals) that was 1.1 times higher than that of exportable crops during 1966-70 was 3.5 times higher during 1971-82. The annual output growth rate for nontradable food crops such as cassava, sweet potatoes, bananas, and plantains was only one-fourth that of export crops during 1966-70 but was 2.4 times higher during 1971-82. However, the rates of output growth for all three groups of commodities for 1971-82 were significantly less than in the 1966-70 period. Overall, farm output declined because most of the resources diverted from exportable crops moved out of agriculture. Contraction of the export crop sector also led to a reduction in foreign exchange receipts needed to maintain, improve, and expand the productive capacity of the farm sector as well as the economy as a whole. The country became more dependent on mining exports, mainly copper. The limited foreign exchange earnings available tended to be allocated to urban areas to maintain and expand production of import-competing manufactures and to provide socioeconomic services to the urban population at the expense of the rural and farming communities. This left the farm sector unable to meet its import requirements, which helped to slow down its expansion. Furthermore, lack of sufficient foreign exchange earnings limited investments in hard and soft infrastructures that are critical to expansion of the food and export subsectors as well as the rest of the economy.

By discriminating against export activities, economic policies adopted in Zaire have ultimately thwarted the food self-sufficiency objective. Despite protection of importable and nontradable food crops, the country's food supply situation significantly deteriorated during 1971-82. This suggests that policies providing a uniform across-the-board treatment could help improve the production not only of food and export crops but also output in other sectors of the economy.[38]

The tendency to rely mostly on price policies to produce changes in the economy has always been appealing to policymakers in many developing countries, including Zaire. The effectiveness of such price policies depends greatly on complementary resource development policies. Both sets of policies should be considered simultaneously if self-sustained growth of the farm and nonfarm sectors is to be achieved.

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[38] Alberto Valdés and Ammar Siamwalla, "Foreign Trade Regime, Exchange Rate Policy and the Structure of Incentives for Agriculture: Essence and Policies," paper presented at the Agricultural Price Policy Workshop, Elkridge, Maryland, April 29-May 2, 1984.

6

THE TRADE-OFF BETWEEN FOOD AND EXPORT CROPS

Per capita food output and the overall standard of living in Africa has been declining since the 1970s.[39] The food supply situation in Sub-Saharan Africa has become a sensitive issue in the international community as well as in Africa. Some observers believe that the emphasis given to export crops in the allocation of public and private resources is the main reason for the poor performance of the food crop subsector in Sub-Saharan Africa. They contend that small peasant farmers, the chief producers of food in most of Sub-Saharan Africa, have little political weight compared to large export-crop growers, which has resulted in a biased allocation of resources. They believe that efforts to improve agriculture should mainly be directed to food production.

Contrary to this line of thinking, a study on Sudan reveals that food-producing activities have little comparative advantage and were heavily protected through exchange rate and trade measures, but export crop production, which has a relatively high comparative advantage, has been discriminated against.[40]

Another view is that expansion of export agriculture is not necessarily harmful to food production. This seems to be supported by the World Bank's 1982 study on Sub-Saharan Africa, which notes that "even if export crop output were to grow at the expense of food crop production, it is not necessarily bad."[41] The study reports that an analysis of FAO data for some 40 African countries shows no positive correlation between strong growth performance in export production and poor performance in food production. The relationship is positive although the correlation is rather weak, a Spearman rank coefficient of 0.42 for the period 1969-71 to 1979.[42]

Several studies on Sudan and Tanzania emphasize the question of economic efficiency regarding food-export crop trade-offs in Africa. Marketing channels for export crops are more developed than those serving food crops. If farmers in some areas specialize in export crop production because conditions are suitable (for example, tree crops in the equatorial forest), they may have serious problems getting food even though their income from exports is relatively high. Largely because of inadequate infrastructure development in food marketing, food prices at the farmer's level may be relatively higher than export crop prices. For these reasons, producers of exportable crops in Tanzania and Ghana, among others, have gone back to food production. In other words, the domestic terms of trade between food commodities and export crops may be worsening for export crop producers. In Zaire, for instance, it is easier to move an export crop to a seaport than to move food items among areas within the country.

Some politicians hold that since conditions are unstable and unpredictable in the world market, it is unwise to depend on it for domestic food requirements. Considerations of economic efficiency and food security may have worked in favor of food self-sufficiency policies.

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[39] World Bank, *Toward Sustained Development in Sub-Saharan Africa: A Joint Program of Action* (Washington, D.C.: World Bank, 1984).

[40] David Franklin, Kirk Youngblood, and Alberto Valdés, "Structure of Incentives for the Rainfed Agricultural Sector in the Sudan," report prepared by Sigma One Corporation, Raleigh, N.C., February 1982 (mimeographed).

[41] World Bank, *Accelerated Development in Sub-Saharan Africa: An Agenda for Action* (Washington, D.C.: World Bank, 1982).

[42] Ibid.

Other economic considerations do not completely support any of the above arguments. A fundamental question facing policymakers in most African countries is: What will happen to the farm sector and the economy as a whole if food crop production is allowed to expand at the expense of export crops in a country where export crop farming is the major source of foreign exchange earnings?

Even in mineral-rich African countries that, like Zaire, do not produce oil, the contribution of agricultural exports to foreign exchange earnings is important, and the need to increase the export base is a real problem. In 1959, when the economic environment was relatively favorable despite the quest for independence, agriculture in Zaire contributed 38.9 percent to total export earnings. This share fell to 16.0 percent during 1971-81, when trade, exchange rate, and other economic policies were inappropriate.

The answer to the question raised above depends in part on whether large-scale farmers shift resources away from export crops into food crop production or into the nonfarm sector when policies that discriminate against exports are implemented by the government. Although not the concern of this study, these issues impinge on the trade-off issue.

Most plantations in Zaire are owned by expatriates or a few rich Zairian families. This is a legacy of Belgian colonization. Under Belgian rule, production of nonfood export crops—raw materials for the metropolitan industry—was stimulated by a number of incentive measures: cheap credit, research, extension, and export and import facilities. Food crop production received relatively little attention from the colonial administration and was left to the Zairian peasants. Twenty-five years after the country gained its independence from Belgium, this dual structure has changed little.

Zairian government policies have tended to be oriented against exports, particularly during 1971-82. This situation has led large-scale farmers to divert most of their resources into nonagriculture, mostly into services, real estate, and speculation. However, these farmers still pay limited attention to livestock, poultry, and pig farming, and in some cases to vegetable farming. These activities have a higher payoff than production of food crops such as cereals, roots, and tubers. It should be stressed that there has been little research on the reaction of large-scale farmers to government policies.

This study examines the question of whether food and export crops compete for resources in peasant agriculture. An aggregate production function used as a tool of analysis would help assess not only changes in the food-export crop mix but also the implications for farm output, food imports, crop exports, farm income, and employment.

Not only are price, input/output, and other relevant data on individual crops needed, but they have to be sufficiently disaggregated by area to permit meaningful analysis based on a production function model. However, the lack of detailed data restricts this analysis to crop supply response, notwithstanding the conceptual and methodological controversies.

Two types of parameters are estimated: own-price and cross-price elasticities of crop output supply. An own-price elasticity indicates the extent to which crop output is affected as a result of a 1 percent change in the crop's own price, whereas the cross-price elasticity gives the impact of a 1 percent change in a competing crop price on the output of the crop. The latter indicates whether there may be a conflict between food and export crops in production. Because of data limitations, this analysis will not be extended to an appraisal of the implications of food-export crop conflict in production for food imports, agricultural exports, farm income, and employment in the peasant sector.

There is little or no literature on supply response studies in Zaire. Bond found none pertaining to Zaire in her extensive review of agricultural responses to prices in Sub-Saharan Africa.[43] As a result, estimates of supply elasticities are attempted for some major crops, notwithstanding serious data limitations and the controversies on the supply response model.

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[43] E. M. Bond, "Agricultural Responses to Prices in Sub-Saharan African Countries," *IMF Staff Papers* 30 (December 1983).

The supply model and the regression equations are reported in Appendix 2. The analysis gives some useful indication of the impact of changes in crop producer prices on crop outputs and mix. This analysis suggests that a change in crop producer prices will have a significant impact on crop outputs, other things remaining the same. Because price intervention policy measures were the main policy devices used by the Zairian government to effect changes in the economy, one can infer that these policy instruments were the most important determinants of the change in crop output. This is because these instruments determine not only the intra- and intersectoral movements of resources, but they also affect the availability of resources such as foreign exchange earnings.

Furthermore, the analysis suggests that food and export crops compete in production. The estimate of the cross-elasticity of palm oil output with respect to the producer price for rice (a competing crop representing food crops) is about –0.453, which is significant and large. This suggests a real conflict between production of palm oil and rice. Considering that groundnuts are not a food crop per se, the supply analysis reveals that the cross-price elasticity of groundnut output with respect to the producer price of maize (representing food crops) is about –0.294. This indicates that groundnuts and maize compete in production.

The response of food output to a change in export crop price appears to be smaller than the response of export crop output to a similar change in the price of food crops. For instance, a 1 percent increase in the cotton price index tends to leave maize output unaffected, but a 1 percent increase in the price index for maize would lead to decreases of 0.135 to 0.190 percent in cotton output. Thus, farmers' response to price changes between food and export crops has been asymmetrical. These results confirm the theoretical proposition that farmers, if their resource endowments are given, would reallocate resources at the margin in favor of the crop whose relative price increases. The difference in the size of the response may be explained by the premium that peasant farmers tend to place on food self-sufficiency.

In sum, the food-export trade-off issue is a real problem in Zairian peasant agriculture. Palm oil competes with food crops in production, as do cotton and groundnuts. The question is whether it is economically efficient and socially sound to adopt trade and exchange rate policies biased more toward staple food crops than to palm oil production in order to boost the production of foodstuffs. Discussion of the above question may not lead to a useful conclusion because palm oil, cereals, tubers, roots, plantains, and bananas are all staple foods in Zaire. Palm oil is the major source of vegetable oil available to the majority of the farming community as well as to a large part of the urban population.

As for cotton and staple food crops such as maize and cassava in cotton-growing areas, policymakers should bear in mind when formulating trade, exchange rate, and other economic policies that a substantial inflow of export earnings is also needed for sustained growth in food production.

Estimates of own- and cross-price elasticities of output supply failed to give acceptable results for coffee, the leading export crop in terms of its contribution to export earnings. Nevertheless, the possibility of conflict between coffee and food crops in peasant agriculture is low in most areas. The bulk of coffee output is produced on large plantations that do not produce food crops. However, in some areas conflict between coffee and food crops in production cannot be ignored. For instance, in Butembo, Lubero, and Beni (Northern Kivu), the production of coffee by peasant farmers is substantial and widespread and may compete with food crops such as beans, potatoes, and vegetables. These are the main food crops traded between the northern part of Kivu region and the rest of the country.

Despite data limitations, it is quite clear that there is a conflict between food and export crops in production in Zaire. A change in the relative prices of these two groups will significantly affect the food-export crop output mix.

7

CONCLUSIONS

Trade, exchange rate, and other economic policies of the Zairian government during the later part of the post-independence era have had pervasive effects on agriculture as well as on the rest of the economy. A comparison of the domestic producer and world prices shows that the importable food crops—taken as a group—and exportable crops were consistently discriminated against. The degree of discrimination varied by crop but was greater for exportable than for importable crops.

The domestic producer prices of food commodities—wage goods—were kept well below the world price as an incentive to import-substitution industrialization. Tax revenue from agricultural and nonagricultural exports (mostly mining) were used, among other things, to expand the productive capacity in the urban area through government investments and to provide cheap credit to industry.

The policy lesson indicated by these developments is that the real exchange rate is one of the critical variables that needs to be monitored by policymakers through fiscal, monetary, income, and other economic policies. The aim should be to maintain the real exchange rate at a level that has yielded encouraging performance of the farm sector and the economy in the past.

Trade, exchange rate, and other economic policies had a substantial impact on the structure of domestic relative prices. The study indicates that a 1 percent rise in the domestic price of importables relative to exportables, as a result of these policies, led to a 0.52 percent increase in the domestic price of home goods relative to exportables. Therefore, at least half of the burden of protecting importables fell on exports (agricultural exports and mining) during 1971-82. This means that a 20 percent increase in the domestic price of all imports represents a 10.4 percent tax on exports. This is in addition to the direct tax levied on exportables. Consequently, the burden imposed on export activities was much heavier than intended by policymakers.

The study indicates that exports with high supply elasticities, such as industrial products, are unable to compete effectively in the world markets. This result is important for the design of overall economic policy. Import-substitution industrialization would jeopardize not only the promotion of agricultural and mineral exports, but also that of industrial exports. Within industry, resources would move away from export activities to import-competing ones. In agriculture, resources would shift out of agricultural exports toward import-competing and home goods production, both agricultural and industrial. Resources used in mining, which in Zaire is almost exclusively for export, would tend to move into industrial import-competing and home goods production.

These resource movements would reduce export activity in the economy and the country would be unable to earn enough foreign exchange to maintain, improve, and expand overall economic activity. Growth of the farm sector and the economy as a whole would decelerate as they did in Zaire during 1971-82.

Comparing 1971-82 with 1966-70, when trade and exchange rate policies were less restrictive, shows that, within the farm sector, rates of growth declined from 4.0 percent to 1.6 percent for food production and from 8.9 percent to 0.8 percent for export production.[44] Meanwhile, the population grew about 2.8 percent per year.

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[44] The high growth rate for export crop output in 1966-70 should also be ascribed to the rehabilitation of economic activity in the Haut-Zaire and Kivu regions, the two major export crop-producing zones most affected by the Civil War of 1963-65.

Clearly, restrictive trade and exchange rate policies do not help improve the country's food self-sufficiency. The study indicates that policymakers should strive for a uniform across-the-board treatment for all tradables if the production of these commodities as well as that of nontradables is to be enhanced.

APPENDIX 1: SUPPLEMENTARY TABLES

Table 8—Growth of food import volume, 1966-82

Year	Total Import Growth	Cereal Import Growth	Other Food Import Growth	Total Food Import Growth
		(percent)		
1966	0.0	0.0	0.0	0.0
1967	-66.7	-39.1	-7.7	-22.4
1968	-20.7	50.2	-6.0	14.7
1969	20.4	-19.1	5.8	-6.2
1970	33.6	31.4	19.6	24.5
1971	19.9	4.8	-10.1	-3.6
1972	-25.9	-8.0	44.4	20.0
1973	21.0	46.6	-8.7	11.5
1974	19.4	36.4	2.7	18.9
1975	-12.8	-40.5	-32.6	-37.0
1976	-24.6	130.9	101.9	116.9
1977	-8.1	-35.7	-64.0	-48.3
1978	-14.1	4.8	45.5	17.5
1979	-4.3	-37.8	-11.0	-27.4
1980	0.1	62.3	-9.0	28.5
1981	-26.0	66.5	-41.4	30.3
1982	-14.8	-44.5	-21.1	-41.0

Sources: Banque Nationale du Zaire, *Rapport Annuel* (Kinshasa: Banque Nationale du Zaire, various years); and Food and Agriculture Organization of the United Nations, "Trade Yearbook Tapes," Rome, various years.

Table 9—Food import bill, 1966-81

Year	Total Import Bill	Food Import Bill			Food Import Bill as Percentage of Total Imports		
		Cereal	Other	Total	Cereal	Other	Total
		(current U.S. $ million)			(percent)		
1966	1,020.0	17.2	19.5	36.7	1.7	1.9	3.6
1967	331.8	10.6	18.3	28.9	3.2	5.5	8.7
1968	292.0	14.9	16.1	31.0	5.1	5.5	10.6
1969	370.0	12.2	17.1	29.3	3.3	4.6	7.9
1970	524.0	17.6	22.7	40.3	3.4	4.3	7.7
1971	666.0	20.0	22.1	42.1	3.0	3.3	6.3
1972	522.0	20.3	35.3	55.6	3.9	6.8	10.7
1973	691.8	35.5	38.4	73.9	5.1	5.6	10.7
1974	954.0	60.0	49.0	109.0	6.3	5.1	11.4
1975	946.2	40.8	37.8	78.6	4.3	4.0	8.3
1976	784.5	95.9	77.7	173.6	12.2	9.9	22.1
1977	807.5	67.0	30.4	97.4	8.3	3.8	12.1
1978	759.6	83.0	52.3	135.3	10.9	6.9	17.8
1979	885.4	59.2	53.1	112.3	6.7	6.0	12.7
1980	1,015.2	84.9	82.1	167.0	8.4	8.1	16.5
1981	832.2	156.9	84.1	241.0	18.9	10.1	29.0

Sources: Banque Nationale du Zaire, *Rapport Annuel* (Kinshasa: Banque Nationale du Zaire, various years); International Monetary Fund, *International Financial Statistics Yearbook, 1984* (Washington, D.C.: IMF, 1985); and Food and Agriculture Organization of the United Nations, *FAO Trade Yearbook*, various issues (Rome: FAO, various years).

Table 10—Sources of food supply, 1966-81

Year	Domestic Food Production	Cereal Food Aid	Commercial Cereal Imports	Total Cereal Imports
		(percent)		
1966	95.5	3.3	1.2	4.5
1967	95.4	2.2	2.4	4.5
1968	96.6	1.4	2.0	3.4
1969	97.0	0.7	2.3	3.0
1970	95.7	0.1	4.3	4.3
1971	95.1	0.5	4.4	4.9
1972	95.3	0.7	4.0	4.7
1973	93.2	0.0	6.8	6.8
1974	93.6	0.0	6.4	6.4
1975	95.6	0.0	4.4	4.4
1976	93.6	0.4	6.0	6.4
1977	94.0	0.5	5.5	6.0
1978	90.8	1.3	7.9	9.2
1979	92.1	1.3	6.6	7.9
1980	92.1	1.4	6.5	7.9
1981	91.1	1.6	7.3	8.9

Sources: Food and Agriculture Organization of the United Nations, "FAO Food Balance Sheets, 1961-65 Average to 1977," Rome, 1978 (computer printout); International Food Policy Research Institute, "Food Aid Tape," Washington, D.C., 1981; and Food and Agriculture Organization of the United Nations, "Trade Yearbook Tapes," Rome, various years.

Notes: Domestic food production includes the production of cereals, roots, tubers, plantains, and pulses (primarily groundnuts). Food exports during the period were nil or negligible.

Table 11—Food import capacity, 1966-81

Year	Total Food Import Bill	Total Value of Export Crops	Total Value of All Exports	Total Food Import Bill as Percentage of Total Value of Export Crops	Total Food Import Bill as Percentage of Total Value of All Exports
			(current U.S. $ million)		
1966	36.7	62.0	424.2	59.2	8.7
1967	28.9	73.9	308.8	39.1	9.3
1968	31.0	80.2	570.2	38.7	5.4
1969	29.3	81.5	680.2	36.0	4.5
1970	40.3	96.0	781.2	42.0	5.2
1971	42.1	34.8	687.0	121.0	6.1
1972	55.6	106.3	737.6	52.3	7.5
1973	73.9	126.7	1,012.8	58.3	7.3
1974	109.0	179.8	1,381.0	60.6	7.9
1975	78.6	100.4	864.8	78.3	9.1
1976	173.6	323.5	867.9	53.7	20.0
1977	97.4	293.2	1,019.1	33.2	9.6
1978	135.3	270.7	772.8	50.0	17.5
1979	112.3	190.9	1,169.6	58.9	9.6
1980	167.0	238.2	2,476.2	70.1	6.7
1981	241.0	182.6	1,889.3	131.9	12.8

Sources: Food and Agriculture Organization of the United Nations, "Trade Yearbook Tapes," Rome, various years; and Banque Nationale du Zaire, *Rapport Annuel* (Kinshasa: Banque Nationale du Zaire, various years).

Table 12—Inflation, exchange rates, and balance of payments, 1966-83

Year	Domestic Consumer Price Index	International Index of Inflation	Official Exchange Rate	Parallel Market Rate	Current Account
			(Z/U.S. $)		(U.S. $ million)
1966	13.3	51.2	0.165	0.647	3.8
1967	18.7	53.3	0.333	0.587	14.4
1968	35.1	55.6	0.500	0.650	50.3
1969	38.2	58.5	0.500	0.626	47.0
1970	45.4	62.0	0.500	0.724	−63.7
1971	47.6	65.7	0.500	0.775	−124.7
1972	55.4	69.5	0.500	0.780	−365.5
1973	64.6	76.1	0.500	0.837	−279.3
1974	77.8	87.9	0.500	0.967	−471.1
1975	100.0	100.0	0.500	1.040	−592.7
1976	188.2	110.0	0.807	2.423	−830.2
1977	307.0	123.2	0.857	3.267	−1,451.3
1978	486.3	134.9	0.836	5.146	−82.8
1979	961.2	150.8	1.729	. . .	−14.9
1980	1,323.2	173.6	2.800	. . .	−1.5
1981	1,813.2	191.7	4.384	. . .	. . .
1982	2,446.9	203.3	5.750	. . .	. . .
1983[a]	4,834.3	209.8	30.000	. . .	. . .

Sources: The domestic consumer price index is derived from data provided by Zaire, Institut National des Statistiques, *Annuaires Statistiques* (Kinshasa: INS, various years). Data for the international index of inflation came from World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1984). The official exchange rate is from International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984). The parallel market rate is from *Pick's Currency Yearbook, 1980* (New York: Franz Pick Publishing Co., 1980).

[a] Data for 1983 are as of September 23, 1983. The currency was devalued from 5.750 Z/U.S. $ to 30.00 Z/U.S. $.

Table 13—FAO and Zairian crop export data, 1966-75

	Coffee			Cocoa Beans			Natural Rubber		
Year	FAO	Zaire	Divergence	FAO	Zaire	Divergence	FAO	Zaire	Divergence
				(1,000 metric tons)					
1966	36.0	34.7	1.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1967	43.5	38.2	5.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1968	52.7	53.1	−0.4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1969	48.8	48.9	−0.1	4.6	4.3	0.3	n.a.	n.a.	n.a.
1970	58.4	65.0	−6.6	5.0	4.4	0.6	19.0	31.4	−12.4
1971	71.6	71.6	0.0	6.0	6.0	0.0	39.9	39.9	0.0
1972	74.1	74.1	0.0	5.0	6.0	−1.0	37.8	37.7	0.1
1973	55.1	66.9	−11.8	5.2	5.2	0.0	24.7	30.2	−5.5
1974	70.5	77.7	−7.2	4.6	4.7	−0.1	29.3	26.6	2.7
1975	59.4	58.9	0.5	4.9	5.3	−0.4	21.1	24.2	−3.1

Sources: Food and Agriculture Organization of the United Nations, *FAO Trade Yearbook*, various issues (Rome: FAO, various years); and Banque Nationale du Zaire, *Rapport Annuel* (Kinshasa: Banque Nationale du Zaire, various years).

Note: n.a. indicates that data were not available.

Table 14—Government expenditures, 1966-81

Year	Government Surplus (+) or Deficit (−)	Government Expenditures	
		Total	Share in GDP
	(current Z million)		(percent)
1966	−10.1	63	20.7
1967	−5.7	88	18.4
1968	−18.2	140	19.4
1969	0.9	197	22.4
1970	−20.3	266	28.4
1971	−76.2	285	27.2
1972	−81.5	265	22.9
1973	−142.0	312	21.2
1974	−324.4	428	23.8
1975	−214.6	452	23.6
1976	−421.0	555	19.4
1977	−450.4	772	19.5
1978	−595.5	893	16.3
1979	−533.9	1,857	16.7
1980	−237.5	3,391	19.7
1981	−1,332.2	4,190	17.8

Source: International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984).

Table 15—Domestic inflation, money supply, and claims on government, 1966-82

Year	Domestic Inflation		Money Supply		Claims on Government	
	Index	Change	Million Zaires	Change	Million Zaires	Change
	(1975 = 100)	(percent)	(current Z million)	(percent)	(current Z million)	(percent)
1966	13.3	0.0	77.7	0.0	68.6	0.0
1967	18.7	40.6	111.0	42.9	81.0	18.1
1968	35.1	87.7	136.2	22.7	89.8	10.9
1969	38.2	8.8	154.4	13.4	113.0	25.8
1970	45.4	18.8	188.3	22.0	168.8	49.4
1971	47.6	4.8	190.5	1.2	118.1	−30.0
1972	55.4	16.4	235.8	23.8	145.3	23.0
1973	64.6	16.6	294.7	25.0	172.0	18.4
1974	77.8	20.4	394.6	33.9	302.2	75.7
1975	100.0	28.5	462.8	17.3	417.7	38.2
1976	188.2	88.2	680.2	47.0	747.9	79.1
1977	307.0	63.1	1,058.9	55.7	1,104.4	47.7
1978	486.3	58.4	1,651.4	56.0	1,860.9	68.5
1979	961.0	97.6	1,651.9	0.0	2,483.0	33.4
1980	1,323.2	37.7	2,884.9	74.6	2,830.5	14.0
1981	1,813.2	37.0	4,395.6	52.4	4,662.4	64.7
1982	2,446.9	34.9	7,347.2	67.1	8,407.8	80.3

Sources: Zaire, Institut National des Statistiques, *Annuaires Statistiques* (Kinshasa: INS, various years); and International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984).

Table 16—Share of agriculture in the government budget, 1970-81

Year	Current Expenditure	Investment Expenditure	Total
		(percent)	
1970	5.7	3.3	9.0
1971	8.8	3.0	11.8
1972	1.3	3.8	5.1
1973	1.6	1.9	3.5
1974	1.8	3.4	5.2
1975	8.9	3.4	12.3
1976	3.1	7.5	10.6
1977	2.8	2.3	5.1
1978	2.9	15.5	18.4
1979	1.7	9.2	10.9
1980	1.4	13.1	14.5
1981	1.8	3.6	5.4

Source: Unpublished data provided by Zaire, Département de l'Agriculture, Direction des Etudes, Kinshasa, n.d.

Table 17—International price indexes for Zairian imports and exports, 1970-81

Year	Price Indexes		Terms of Trade (Exports/Imports)
	Imports	Exports	
		(1970 = 100)	
1970	100.0	100.0	100.0
1971	111.6	81.9	73.4
1972	125.5	76.5	61.0
1973	156.3	104.6	66.5
1974	204.4	140.0	68.8
1975	260.4	111.2	42.7
1976	469.8	211.6	45.0
1977	572.5	255.8	44.7
1978	672.6	274.9	40.9
1979	1,716.0	784.8	45.0
1980	3,232.8	1,410.4	43.6
1981	4,813.1[a]	1,758.7[a]	36.5[a]

Source: Banque Nationale du Zaire, *Rapport Annuel 1979* (Kinshasa: Banque Nationale du Zaire, 1980), p. 196.

[a] This is an estimate.

Table 18—Implicit rates of protection of farm products, 1971-82

Year	Importables			All Importables	Exportables			All Exportables	All Farm Products
	Maize	Rice	Groundnuts		Coffee	Palm Oil	Cotton		
1971	-5.78	10.57	-51.08	-27.71	-26.01	45.83	-75.62	-20.11	-23.83
1972	-1.68	64.54	-55.95	-18.83	-33.41	121.61	-78.17	-12.73	-15.78
1973	14.31	-8.52	-46.49	-26.74	-49.98	54.11	-87.63	-43.65	-34.86
1974	-16.04	-19.70	-70.01	-48.76	-53.14	-17.28	-89.50	-49.69	-49.15
1975	-1.33	-4.06	-41.15	-21.47	-55.04	2.09	-86.15	-38.15	-27.31
1976	-30.34	28.62	-50.32	-25.77	-81.14	74.60	-85.83	-60.09	-41.21
1977	-2.92	68.39	-44.66	-7.51	-82.58	-21.11	-86.94	-67.30	-35.01
1978	39.10	168.38	-20.49	36.66	-58.96	46.78	-87.65	-42.40	2.66
1979	...	...	-40.30	...	3.78	60.13	-88.12	-1.93	...
1980	-8.97	87.26	-9.48	12.94	-57.51	-25.08	-92.88	-61.58	-20.59
1981	-33.34	16.84	-34.52	-23.38	-49.60	-27.69	-92.31	-55.24	-32.94
1982	-9.52	52.78	-22.37	-11.26	-67.51	3.81	-94.47	...	...

Sources: Computed from basic data provided by the government of Zaire, particularly the Institut National des Statistiques, Banque Nationale du Zaire, and the Département de l'Agriculture. Other basic data were obtained from the World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1984); and the International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984).

Notes: All the numbers were multiplied by −1. The negative values are the implicit rates of taxation, whereas the positive ones are the implicit rates of subsidy.

Table 19—Official floor producer prices for major staple food commodities, 1975-81

Year	Maize	Rice
	(Z/metric ton)	
1975	70	80
1976	120	120
1977	120	120
1978	220	160
1979	350	500
1980	500	700
1981	650	800

Source: Unpublished data from Zaire, Département de l'Agriculture, Division d'Etudes et de Programmation, Bureau d'Analyse Economique, Kinshasa, 1982.

Notes: On May 29, 1982, all the farm and nonfarm prices were liberalized.

Table 20—Output indexes for major traded farm crops, 1963-81

Year	Importables	Exportables	Total Farm Output
		(1974-76 = 100)	
1963	39.17	107.28	58.59
1964	36.55	98.46	54.20
1965	36.87	67.07	45.48
1966	48.22	72.84	55.24
1967	52.93	83.20	61.56
1968	59.73	137.82	81.99
1969	65.61	144.36	88.06
1970	86.65	108.24	92.81
1971	89.30	116.27	96.99
1972	92.86	112.19	98.38
1973	95.75	103.61	97.99
1974	97.50	104.33	99.44
1975	100.14	90.23	97.31
1976	102.36	105.45	103.24
1977	104.26	78.59	96.94
1978	103.61	85.39	98.42
1979	108.26	75.84	99.02
1980	113.41	83.66	104.93
1981	119.18	79.80	107.95

Sources: Computed from basic data provided by the government of Zaire, particularly the Institut National des Statistiques, Banque Nationale du Zaire, and the Département de l'Agriculture. Other basic data were obtained from the World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1984); and the International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984).

Table 21—Indexes and annual changes of domestic prices and the official exchange rate, 1966-82

Year	Consumer Price (CPI)		Home Goods Price[a]		Exportable Goods Price		Imported Goods Price		Official Exchange Rate	
	Index	Change	Index	Change	Index	Change	Index	Change	Index	Change
	(1975 = 100)	(percent)	(1975 = 100)	(percent)	(1975 = 100)	(percent)	(1975 = 100)	(percent)	(1975 = 100)	(percent)
1966	12.1	0.0	15.4	0.0	77.8	0.0	10.0	0.0	33.0	0.0
1967	16.9	39.7	22.1	43.5	73.5	-5.5	14.3	43.0	66.6	101.8
1968	31.8	88.2	48.1	117.6	77.1	4.9	27.6	93.0	100.0	50.2
1969	34.6	8.8	48.7	1.2	89.7	16.3	28.5	3.3	100.0	0.0
1970	42.8	23.7	63.9	31.2	89.9	0.2	34.6	21.4	100.0	0.0
1971	44.9	4.9	60.3	5.6	73.7	-18.0	36.3	4.9	100.0	0.0
1972	52.3	16.5	65.2	8.1	69.1	-6.2	42.2	16.3	100.0	0.0
1973	69.0	31.9	75.3	15.5	98.7	42.8	49.2	16.6	100.0	0.0
1974	74.5	8.0	76.1	1.1	122.8	24.4	70.8	43.9	100.0	0.0
1975	100.0	34.2	100.0	31.4	100.0	-18.6	100.0	41.2	100.0	0.0
1976	181.2	81.2	171.2	71.2	190.3	90.3	181.7	81.7	161.4	61.4
1977	299.0	65.0	255.8	49.4	230.0	20.1	312.3	71.9	171.4	6.2
1978	476.4	59.3	294.6	15.2	247.2	7.5	512.4	64.1	167.2	-2.5
1979	961.0	101.7	710.0	141.0	705.8	185.5	1,126.1	119.7	345.2	106.5
1980	1,323.1	37.7	1,229.5	73.2	1,268.3	79.7	1,655.5	47.0	560.0	62.2
1981	1,813.2	37.0	1,867.5	51.9	1,589.7	25.3	2,174.0	31.3	876.8	56.6
1982	2,446.9	34.9	2,757.4	47.7	1,717.4	8.0	2,892.6	33.0	1,150.0	31.2

Sources: Zaire, Institut National des Statistiques, *Annuaires Statistiques* (Kinshasa: INS, various years); Banque Nationale du Zaire, *Rapport Annuel* (Kinshasa: Banque Nationale du Zaire, various years); and International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984).

[a] The home goods price index is the series for the consumer price of housing, used as a proxy for home goods.

Table 22—Domestic relative prices and the real exchange rate, 1966-82

Year	Relative Price of Exportables		Relative Price of Importables		Real Exchange Rate	
	Index	Change	Index	Change	Index	Change
	(1975 = 100)	(percent)	(1975 = 100)	(percent)	(1975 = 100)	(percent)
1966	505.2	0.0	64.9	0.0	109.7	0.0
1967	332.6	−34.2	64.7	−0.3	160.6	46.4
1968	160.3	−51.8	57.4	−11.3	115.6	−28.0
1969	184.2	14.9	58.5	1.9	120.1	3.9
1970	140.7	−23.6	54.1	−7.5	97.0	−19.2
1971	122.2	−13.1	60.2	11.3	109.0	12.4
1972	106.0	−13.3	64.7	7.5	106.6	−2.2
1973	131.1	23.7	65.3	0.9	101.1	−5.2
1974	161.4	23.1	93.0	42.4	115.5	14.2
1975	100.0	−38.0	100.0	7.5	100.0	−13.4
1976	111.2	11.2	106.1	6.1	103.7	3.7
1977	89.9	−19.2	122.1	15.1	82.6	−20.4
1978	89.9	6.7	173.9	42.4	76.6	−7.3
1979	99.4	18.5	158.6	−8.8	73.3	−4.3
1980	103.2	3.8	134.6	−15.1	79.1	7.9
1981	85.1	−17.5	116.4	−13.5	90.0	13.8
1982	62.3	−26.8	104.9	−9.9	84.8	−5.8

Sources: Computed from basic data provided by the government of Zaire, particularly the Institut National des Statistiques, Banque Nationale du Zaire, and the Département de l'Agriculture. Other basic data were obtained from the World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1984); and the International Monetary Fund, *International Financial Statistics Yearbook, 1983* (Washington, D.C.: IMF, 1984).

Note: The relative prices of exportables and importables are the ratios of the prices of exportables or importables to the prices of home goods (P_x/P_h, P_m/P_h). The real exchange rate is the ratio of the product of the foreign consumer price index and the exchange rate to the price of home goods ($[FPI]E_o/P_h$).

Table 23—Overall rate of import tariff, selected years

Year	Total Value of Imports	Total Value of Import Duties	Rate of Import Duties
	(Z million)		(percent)
1973	391.0	113.2	29.0
1974	484.0	113.4	23.4
1975	463.5	111.5	24.0
1979	768.0	156.2	20.3
1980	929.4	226.5	24.4

Source: Unpublished data from Zaire, Département de Finance, Direction de l'Informatique, Statistiques de Commerce Extérieur, Kinshasa, 1983.

Table 24—Values of imports and exports of selected agricultural commodities, 1970-82

Year	Maize	Rice	Groundnuts	Coffee	Palm Oil	Cotton
	(Z/metric ton)					
1970	35.10	82.80	114.80	355.36	130.94	302.00
1971	32.31	68.83	124.45	341.47	110.63	359.00
1972	33.74	65.59	130.65	447.30	86.35	379.00
1973	33.34	143.64	196.45	580.55	137.75	621.50
1974	55.56	188.85	303.50	589.94	291.56	650.50
1975	81.08	156.32	226.00	567.18	210.60	577.50
1976	153.33	268.02	342.17	1,542.38	209.82	1,283.04
1977	133.78	321.38	472.29	2,581.97	604.49	1,242.65
1978	133.23	307.49	516.49	1,800.73	433.30	2,401.58
1979	305.89	621.35	976.02	2,581.39	969.05	4,186.00
1980	613.17	1,004.92	1,380.96	6,185.40	1,630.00	8,206.85
1981	915.69	1,655.71	2,788.22	6,210.63	2,149.98	10,033.75
1982	1,081.58	1,882.95	2,325.30	9,084.73	2,212.04	18.676.16

Sources: Zaire, Institut National des Statistiques, *Annuaires Statistiques* (Kinshasa: INS, various years); and World Bank, *Commodity Trade and Price Trends* (Baltimore: World Bank, 1983), p. 78 (groundnuts).

APPENDIX 2: ELASTICITY ESTIMATES OF CROP OUTPUT SUPPLY

It is generally postulated that expected crop producer prices, expected input prices, weather, and technology are the main determinants of the output supply response in agriculture.[45] This general formulation is the basis for estimates of the elasticities of output for selected crops. The particularities of the Zairian farm sector are taken into account.

Available evidence indicates that in the aggregate there is limited use of intermediate inputs such as fertilizers, pesticides, and high-yielding varieties by most Zairian peasant farmers.[46] Consumption of fertilizers in Zaire during 1961/62-1965/66 averaged 0.2 kilograms per hectare of cultivated area compared with 1.2 kilograms per hectare during 1979/80-1981/82.[47] The institutional framework created by the colonial administration through which modern technologies and appropriate techniques of production were to be gradually introduced into the farming sector has been dismantled and has not been replaced by an alternative.[48] To account for the dominant role of labor input in Zairian peasant agriculture, the wage rate is used in the output supply response functions (Tables 25 and 26).

Crop Supply Response Functions

The four crops selected for this analysis include two exportables (cotton and palm oil) and two importables (groundnuts and maize). Results for coffee were not acceptable, probably because of substantial underreporting and smuggling.[49]

Peasant production of palm oil competes for productive resources with that of staple food crops such as maize, rice, cassava, and plantains. The palm oil produced by millions of peasant farmers is assumed to be substantial. Cotton is produced in limited areas in northern and southern regions, where it competes with maize, cassava, and groundnuts.

Groundnuts are mainly produced in the savannah areas, where maize and cassava are the most important competitors. In the northern and southern savannah zones, cassava and maize are cultivated in mixed cropping, whereas cotton and groundnuts are produced as pure crops. In the Zairian Basin, maize, cassava, plantains, and rice are planted in a mixed cropping system by peasant farmers, while palm oil trees are generally cropped alone. All these crops could compete with maize.

The crop supply response equation can be formally written as

$$Q_i = f(P_i, P_c, W, T), \qquad (23)$$

where

Q_i = output index for the crop of concern,

P_i = expected producer price index for the crop of concern,

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[45] S. L. Bapna, *Aggregate Supply Response of Crops in a Developing Region* (New Delhi: Sultan Chand, 1981).

[46] Tshikala B. Tshibaka, "Intensification de l'Agriculture Traditionelle Zairoise: La Contribution des Engrais Chimiques," Université Nationale du Zaire, Campus de Kisangani, Yangambi, 1974 (mimeographed); Tshuinza, "Allocation et Utilisation des Ressources dans l'Agriculture Traditionelle."

[47] These data were provided by Food and Agriculture Organization of the United Nations, *Fertilizer Review, 1982* (Rome: FAO, 1983). Data on fertilizer use per crop are not available. However, the bulk of fertilizer is used in plantation agriculture. A substantial proportion of the fertilizer imported does not reach the farms because it is wasted during distribution, storage, and marketing.

[48] N. M. Kapambwe, "La Relance des Coopératives Agricoles au Zaire: Etude Particulière de la Coopérative des Turumbu," Université Nationale du Zaire, Campus de Kisangani, Faculté des Sciences Agronomiques, Yangambi, 1974 (mimeographed); and Tshikala B. Tshibaka, "Analyse Economique de l'Effet de la Chaux sur la Productivité de Sols Acides," *Annales* (Yangambi: Institut Facultaire des Sciences Agronomiques, 1980).

[49] World Bank, *Country Study: Zaire,* p. 60.

Table 25—Indexes of wages in the private and public sectors, 1971-82

Year	Retail Price Index	Private Sector		Public Sector	
		Nominal Wage Index	Real Wage Index	Nominal Wage Index	Real Wage Index
			(1970 = 100)		
1971	108.1	123.1	113.9	122.5	113.3
1972	122.7	132.0	107.6	130.0	105.9
1973	136.5	132.0	96.7	130.0	95.2
1974	172.5	145.1	84.1	159.9	92.6
1975	227.7	229.7	131.6	180.8	79.4
1976	398.3	364.1	91.4	232.0	58.2
1977	641.5	454.4	70.8	242.0	37.7
1978	1,009.6	595.8	59.0	282.0	28.0
1979	2,131,6	636.9	29.9	579.1	27.2
1980	3,231.3	1,041.9	32.2	671.7	20.8
1981	4,506.9	1,657.5	36.8	831.5	18.4
1982	6,200.0	2,692.3	43.4	1,030.2	16.6

Sources: Banque Nationale du Zaire, *Rapport Annuel 1975* (Kinshasa: Banque Nationale du Zaire, 1976), p. 75; Banque Nationale du Zaire, *Rapport Annuel 1979* (Kinshasa: Banque Nationale du Zaire, 1980), p. 106; Banque Nationale du Zaire, *Rapport Annuel 1982* (Kinshasa: Banque Nationale du Zaire, 1983), p. 96.

P_c = expected producer price index of the competing crop,

W = minimum wage rate index, and

T = trend variable to account for other variables.

Supply refers to the quantities offered for sale in the market at different prices. Total production is treated as the relevant dependent variable. Conceptually, in the most general sense, total production is viewed as total supply in the market, if total demand includes that by farm households.[50]

It is not known exactly how farmers form their expectations of crop prices. The traditional method is to consider last year's prices or sowing time prices as the basis. However, Nerlove argues that estimates of supply response obtained by using last year's

Table 26—Indexes of the legal minimum wage data, 1973-82

Year	Retail Price Index	Nominal Wage Index	Real Wage Index
		(1970 = 100)	
1973	136.5	132.0	96.7
1974	172.5	145.1	84.1
1975	227.7	169.2	74.3
1976	398.3	222.3	55.8
1977	641.5	232.0	36.2
1978	1,009.6	265.8	26.3
1979	2,131,6	355.2	16.7
1980	3,231,3	377.0	11.7
1981	4,506.9	388.5	8.6
1982	6,200.0	442.3	7.1

Sources: Banque Nationale du Zaire, *Rapport Annuel 1979* (Kinshasa: Banque Nationale du Zaire, 1980), p. 106; and Banque Nationale du Zaire, *Rapport Annuel 1982* (Kinshasa: Banque Nationale du Zaire, 1983), p. 96.

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[50] Bapna, *Aggregate Supply Response of Crops in a Developing Region.*

prices are underestimated.[51] He claims that farmers take prices of many years into account and that the weight given the price in preceding years declines over time. Although Nerlove's expectation model has been the basis of many supply response studies in the past, it has been questioned by an increasing number of researchers.[52]

Five price expectation models were tried by Bapna in his study of aggregate supply response of crops in India. Two of them were selected for this study. In the first, the farmer expects the last cropping season price to prevail in the current season—the expected price under this model is $P_1 = P_{t-1}$. In the second, the farmer assumes a weighted average price for the three years. The weights are 3, 2, and 1. This model seems more relevant to perennial crops such as palm oil trees. The expected price in this case is computed:

$$P_2 = (3 P_{t-1} + 2 P_{t-2} + P_{t-3})/6. \quad (24)$$

The traditional approach of considering the preceding year's wage rate is adopted.[53] Producer prices and the wage rate are detrended, using the consumer price index as deflator, to avoid any multicollinearity problem between the trend and other explanatory variables.

Available output and price data constitute an additional problem. For instance, palm oil data refer to the country as a whole and do not distinguish peasant farms and plantations. It is evident that peasant farmers and plantation owners differ in their supply responsiveness to own-price changes and to crop substitution possibilities. A peasant farmer can shift resources from palm oil to rice or maize production much more easily than a palm-oil plantation can. For a peasant farmer, the cross-price elasticity of exportable crop output would be expected to be significantly different from zero, whereas that of export-crop plantations would be zero. Plantations are highly specialized, handling only one crop such as coffee or palm oil. In addition, the supply responsiveness to own-price changes would be greater for a plantation than for a peasant farmer because the latter has many more crop substitution possibilities. The extent of this bias in the regression results is hard to determine. In the case of palm oil, a downward bias in the own-price elasticity estimate and an upward bias in the cross-price elasticity estimate of palm oil output are likely to be introduced. This also will be the case for other crops produced in both peasant and plantation agriculture.

It is not known whether the aggregate producer prices published by Zaire's Department of Agriculture are weighted to take into account the variability of output and prices among crop-producing areas. If the producer prices are not weighted, a bias would be introduced in the values of estimates of parameters of concern. This may be the case for palm oil, groundnuts, and maize. However, cotton prices are the same throughout the country. Although the estimates derived in this study may not be as accurate as would be desired, they do help assess the effects of the policies analyzed.

Results and Discussion

Due to the possibility of a high degree of autocorrelation, particularly when dealing with limited time-series data, the full transform method was used to derive the regression equations for palm oil and other crops.[54] The analysis shows that the output of palm oil is critically determined by the expected producer prices of palm oil and food crops (such as rice) as well as by the expected wage rate.

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[51] Marc Nerlove, *Dynamics of Supply: Estimation of Farmers' Response to Supply* (Baltimore, Md.: Johns Hopkins University Press, 1958), pp. 87-111.

[52] Bapna, *Aggregate Supply Response of Crops in a Developing Region.*

[53] Ibid.

[54] Gallant and Goebel, "Nonlinear Regression with Autocorrelated Errors."

Table 27 presents the regression results for palm oil.[55] In both palm oil equations, the fit is good. The regression coefficients of the explanatory variables have the expected signs and are statistically significant, as indicated by the t-ratios in parentheses, except the wage variable in equation (A) and the trend in both equations. However, given the nature of the palm oil tree, equation (B), in which the three-year average weighted price is used as the expected price, is most appropriate.

The estimate of the palm oil own-price elasticity is 0.566 and is comparable with that reported for palm oil in Nigeria.[56] The estimate of cross-elasticity of palm oil with respect to the producer price for rice is about −0.453. This suggests that there is a conflict between palm oil and rice production. Because rice also represents other food crops, one can infer a trade-off between palm oil and food crops in Zaire. Hence, a change in the domestic producer price of palm oil relative to food crops will significantly affect the production of palm oil.

These empirical results are illustrated in Figure 5 (drawn from Tables 28 and 29), which shows an inverse relationship between palm oil output and the producer price for rice but a positive one between

Table 27—Regression results for palm oil, 1970-82

Independent Variable	Dependent Variable: ln Q Palm Oil	
	Equation A	Equation B
Constant	4.996 (31.341)[a]	4.823 (28.904)[a]
ln P_1 palm oil	0.343 (2.589)[b]	. . .
ln P_1 rice	−0.325 (−2.747)[b]	. . .
ln P_2 palm oil	. . .	0.566 (3.840)[a]
ln P_2 rice	. . .	−0.453 (3.315)[b]
ln Wage	−0.076 (−1.551)	−0.158 (−1.666)[c]
T	−0.918 (−0.511)	−0.011 (−0.221)
R^2	0.99	0.98
ρ	0.029 (0.100)	0.268 (0.923)
Degrees of freedom	6	5

Notes: P_1 stands for the producer price lagged one year (P_{t-1}). P_2 is the weighted average producer price for three years ($[3P_{t-1} + 2P_{t-2} + P_{t-3}]/6$). Q stands for quantity.

The numbers in parentheses are t-values.

The first step of the two-step full transform method is to estimate the model using ordinary least squares. Then the autoregressive parameter ρ is estimated. The values of ρ are not significant.

[a] Significant at the 1 percent level.
[b] Significant at the 5 percent level.
[c] Significant at the 10 percent level.

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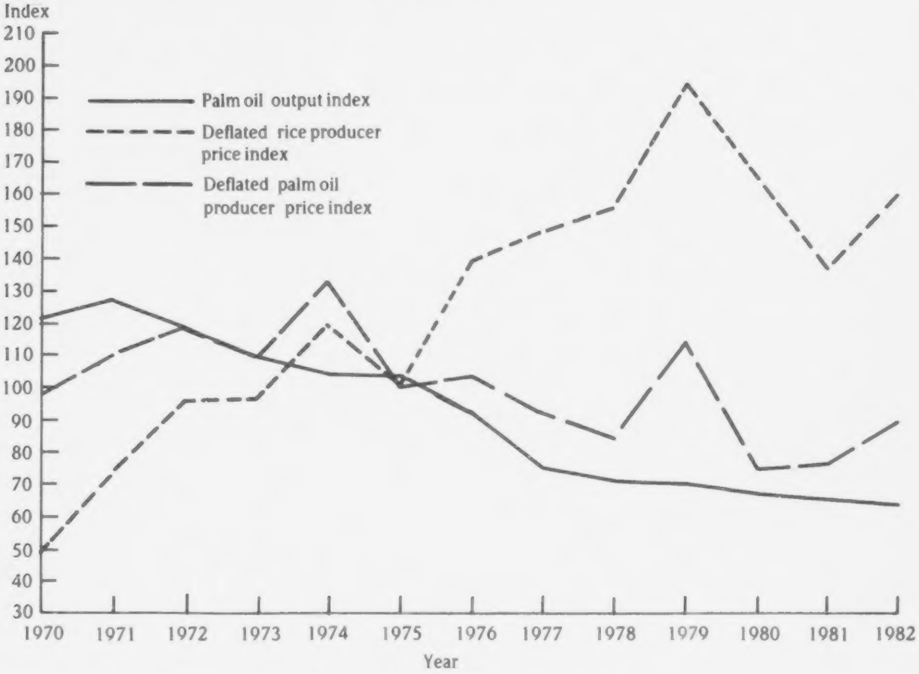
[55] In the regression results, P_1 refers to the one-year lagged price, P_2 to the weighted average price, and W_1 to the one-year lagged wage rate.

[56] Bond, "Agricultural Responses to Prices in Sub-Saharan African Countries."

Figure 5—Indexes of palm oil output, and of the deflated producer prices for palm oil and rice, 1970-82



Sources: Calculated from unpublished data provided by the Government of Zaire.

palm oil output and its own-producer price. The figure definitely indicates that there has been a close relationship between palm oil output and producer prices for food crops over the years.

The wage rate is also a critical determinant of palm oil output. The elasticity of palm oil with respect to the wage rate is about −0.158. This suggests that upward pressure on the wage rate will have, other things being equal, a negative effect on palm oil production. This finding offers substantial evidence that rural-urban labor migration, by reducing the supply of farm labor, will exert upward pressure on wage rates and consequently a downward pressure on palm oil output.

The regression coefficients for price variables for cotton displayed the expected signs in all four equations (Table 30). But they are significant in equations (A) and (C) and insignificant in equations (B) and (D), where the trend variable appears as an explanatory variable. The wage rate regression coefficients are insignificant in all four equations. They have the expected sign in equations (A) and (C), where trend is not used as an explanatory variable.

By dropping the trend variable (which represents a proxy for change in productive capacity and technology over time), equations (A) and (C) provide own-price elasticity estimates of cotton output of 1.446 and 1.975. These estimates are rather high and biased, but they appear to be highly significant. The inclusion of the trend variable improved the fit but lowered the t-values of the price elasticities in equations (B) and (D). This could be due to multicollinearity. In any event, an elasticity estimate

Table 28—Average producer's price for major agricultural commodities, 1970-83

Year	Maize	Rice (Milled)	Cassava (Dry)	Groundnuts	Coffee	Palm Oil (Seed)	Cotton
				(Z/metric ton)			
1970	16.00	31.70	9.00	22.00	164.00	90.00	35.00
1971	20.00	50.00	11.00	40.00	166.00	106.00	57.50
1972	23.00	75.00	13.00	40.00	207.00	133.00	57.50
1973	29.00	100.00	16.00	80.00	221.00	162.00	58.50
1974	41.00	133.30	23.00	80.00	243.00	212.00	60.00
1975	80.00	150.00	76.25	133.00	255.00	215.00	80.00
1976	117.50	379.20	175.00	187.00	320.00	403.00	200.00
1977	160.00	666.70	210.00	322.00	554.00	588.00	200.00
1978	250.00	1,113.30	336.00	554.00	997.00	858.00	400.00
1979	1,600.00	2,783.30	1,015.00	2,065.00	4,040.00	2,340.00	750.00
1980	1,160.00	3,266.70	1,290.00	2,170.00	4,563.00	2,120.00	1,014.00
1981	1,170.00	3,708.30	2,020.00	3,500.00	6,000.00	2,980.00	1,480.00
1982	1,330.00	5,833.30	2,000.00	3,670.00	6,000.00	4,670.00	2,100.00
1983	1,600.00	10,666.60	3,650.00	4,500.00	11,000.00	8,483.00	3,500.00

Sources: Unpublished data from Zaire, Département de l'Agriculture, Division des Statistiques Agricoles, Kinshasa, and Zaire, Département de l'Economie Nationale, Conjoncture Economique, Kinshasa.

Notes: The price of paddy has been divided by 0.60 (1 kilogram of paddy gives about 0.60 kilograms of milled rice) in order to get the farm-gate price of milled rice. This transformation has been performed to compare the world market price with the producer price of rice in Zaire. These price data were collected at the village market level.

Table 29—Output of selected major crops, 1963-83

Year	Maize	Rice	Groundnuts	Palm Oil	Coffee	Cotton
			(1,000 metric tons)			
1963	252	60	130	185	49	43
1964	237	55	122	171	44	40
1965	232	49	137	120	30	19
1966	270	91	149	124	37	20
1967	297	100	163	149	37	24
1968	326	117	181	242	63	45
1969	350	130	200	245	68	60
1970	428	179	267	170	59	49
1971	436	184	278	178	65	58
1972	452	196	282	166	68	51
1973	459	199	299	153	57	68
1974	477	201	303	146	69	47
1975	495	207	308	145	51	27
1976	504	212	315	129	89	24
1977	510	218	319	105	56	33
1978	500	225	306	99	77	15
1979	536	223	334	98	60	19
1980	562	240	339	93	74	29
1981	639	245	347	91	71	21
1982	687	251	357	89	68	. . .
1983	668	258	367	81	63	. . .

Sources: Zaire, Département de l'Agriculture, Division des Statistiques Agricoles, Kinshasa, unpublished data, 1983; Zaire, Institut National des Statistiques, unpublished data, 1983; and Banque Nationale du Zaire, *Rapport Annuel* (Kinshasa: Banque Nationale du Zaire, various years).

Table 30—Regression results for cotton, 1970-82

Independent Variable	Dependent Variable: ln Q Cotton			
	Equation A	Equation B	Equation C	Equation D
Constant	4.486 (4.772)[a]	3.406 (2.360)[b]	3.801 (3.410)[a]	2.727 (2.350)[b]
ln P_1 cotton	1.446 (1.729)[c]	0.809 (0.839)	. . .	. . .
ln P_1 maize	−0.731 (−2.037)[b]	−0.190 (−0.343)	. . .	. . .
ln P_2 cotton	. . .	. . .	1.975 (1.869)[c]	1.239 (1.223)
ln P_2 maize	. . .	. . .	−0.986 (1.994)[b]	−0.135 (−0.280)
ln Wage	−0.809 (−1.032)	0.378 (0.281)	−0.962 (−1.119)	0.839 (0.654)
Trend	. . .	−0.347 (−1.068)	. . .	−0.682 (−1.730)[c]
R^2	0.38	0.44	0.41	0.63
ρ	−0.060 (−0.210)	−0.166 (−0.583)	−0.050 (−0.165)	−0.074 (−0.245)
Degrees of freedom	7	6	6	5

Notes: P_1 stands for the producer price lagged one year (P_{t-1}). P_2 is the weighted average producer price for three years ($[3P_{t-1} + 2P_{t-2} + P_{t-3}]/6$). Q stands for quantity.

The numbers in parentheses are t-values.

The first step of the two-step full transform method is to estimate the model using ordinary least squares. Then the autoregressive parameter ρ is estimated. The values of ρ are not significant.

[a] Significant at the 1 percent level.
[b] Significant at the 5 percent level.
[c] Significant at the 10 percent level.

with a wide confidence interval that is unbiased is preferable to a biased one with a high level of significance. Own-price elasticity estimates derived from equations (B) and (D) are respectively 0.809 and 1.239.

According to Bond, Diejomaoh found that short-run own-price elasticity estimates for cotton output in Nigeria were about 0.67. For Sudan, Bond's estimate of own-price elasticity of cotton output was about 0.39. Two other studies conducted by the same author estimated the own-price elasticity of cotton to be 0.25 for Uganda as a whole and 0.67-0.73 for Buganda/Uganda.[57] These estimates were obtained with a Nerlovian-type model where crop yield was used as a dependent variable rather than total output. Comparison of these elasticity estimates with those in this study could be misleading. However, an own-price elasticity for cotton of about 0.809 could be regarded as acceptable.

The regression results show that maize competes with cotton in production in cotton-growing areas. The cross-elasticity of cotton output with respect to maize price varies between −0.135 and −0.190. The regression results are inconclusive as to the importance of the wage rate variable. This could be because hired labor is seldom used in cotton production.

The direction of the relationships between cotton output, cotton own-producer prices, and maize producer prices is as clear as in the case of palm oil. However, a close observation of Figure 6 shows that cotton output and price both display a declining

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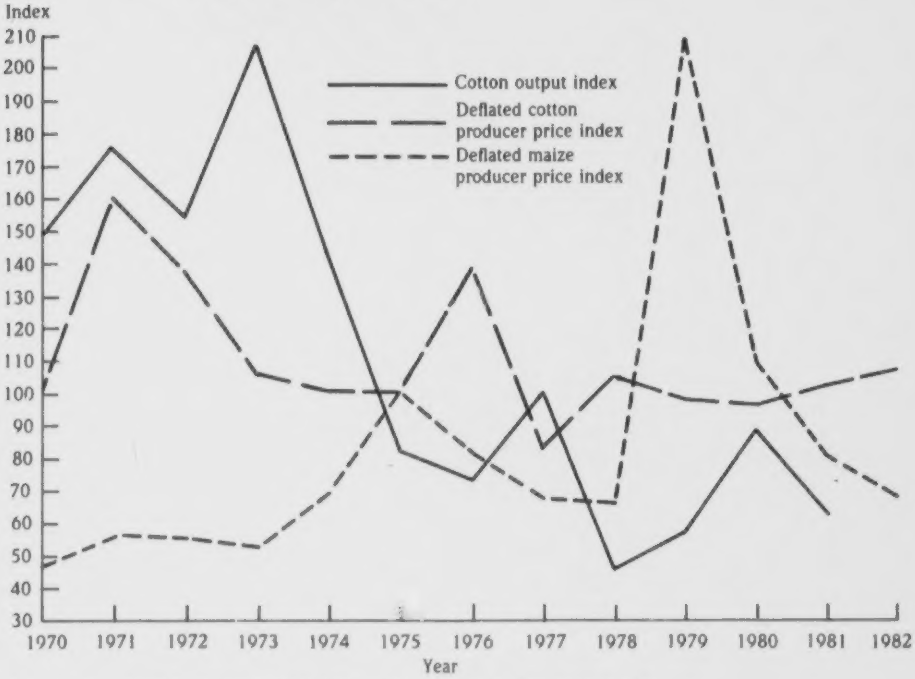
[57] Ibid.

Figure 6—Indexes of cotton output, and of the deflated producer prices for cotton and maize, 1970-82



Sources: Calculated from unpublished data provided by the Government of Zaire.

trend over time, suggesting a positive relationship between cotton output and the cotton producer price. However, little can be said about the relationship between maize producer prices and cotton. However, one should note that the cotton producer price continues to be fixed by the government and the same producer price is applied both to northern and southern cotton regions. The producer prices for maize prevailing in these areas differ and do not necessarily reflect the average producer price for maize used in this study, which refers to the country as a whole. A good estimation might have been possible if the producer price for maize prevailing in each cotton-growing area had been available.

All the regression coefficients for groundnuts are statistically significant except the wage rate and the trend variable in equation (A) (Table 31). In addition, the wage rate coefficient in equation (A) is wrongly signed. Equation (B), having weighted expected prices (P_2 groundnuts and P_2 maize), seems to describe the groundnut supply response much better than that using one-year lagged prices as expected prices (P_1 groundnuts and P_1 maize). Hence, the groundnut equation (B) will be used to derive the estimates of output elasticities with respect to crop prices and the wage rate.

The own-price elasticity of output for groundnuts is about 0.544. This is comparable to the result derived for Nigeria. Bond reports that Olayide found own-price elasticity of output for groundnuts in Nigeria within the range of 0.24 and 0.79 determined by Bond.[58] The cross-elasticity of

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[58] Ibid.

Table 31—Regression results for groundnuts, 1970-82

Independent Variable	Dependent Variable: Q Groundnuts	
	Equation A	Equation B
Constant	94.486 (9.572)[a]	81.365 (9.391)[a]
P_1 groundnuts	0.034 (3.241)[b]	. . .
P_1 maize	−0.026 (−3.086)[b]	. . .
P_2 groundnuts	. . .	0.104 (6.073)[a]
P_2 maize	. . .	−0.076 (−5.532)[a]
Wage	0.018 (0.859)	−0.081 (−2.870)[b]
Trend	0.109 (0.099)	2.278 (2.281)[b]
R^2	0.98	0.99
ρ	0.253 (0.905)	0.392 (1.415)
Degrees of freedom	6	5

Notes: P_1 stands for the producer price lagged one year (P_{t-1}). P_2 is the weighted average producer price for three years ($[3P_{t-1} + 2P_{t-2} + P_{t-3}]/6$). Q stands for quantity.

The numbers in parentheses are t-values.

The first step of the two-step full transform method is to estimate the model using ordinary least squares. Then the autoregressive parameter ρ is estimated. The values of ρ are not significant.

[a] Significant at the 1 percent level.

[b] Significant at the 5 percent level.

groundnut output with respect to the maize price is −0.294, suggesting that there is a conflict in production between groundnuts and maize in groundnut-growing areas. The elasticity of groundnut output with respect to wage amounts to −0.127. In sum, both a change in the groundnut producer price relative to maize and a change in the wage rate will have significant effects on groundnut output. Figure 7 further illustrates these findings and discloses the strong relationships between groundnut output and groundnut and maize producer prices over time.

In Table 32, equations (A), (B), and (C) for maize have their maize price regression coefficients wrongly signed; only equation (D) is significant. The regression coefficients for cotton price display the wrong sign in equations (A) and (C), where the trend is used as an additional explanatory variable. Because of poor results, all four equations could not be used to estimate the price elasticities of maize output.

Nevertheless, equation (D) could be used to estimate the elasticities of maize output. However, this estimate will be biased because the time variable that also explains the variation in output is dropped. The own-price elasticity of maize output estimated from this equation is about 0.121. Using different model specification, Oyejide found that the elasticity of maize output with respect to its own price to be about 0.25 in Nigeria.[59]

The cotton price regression coefficient in equation (D), although insignificant, is

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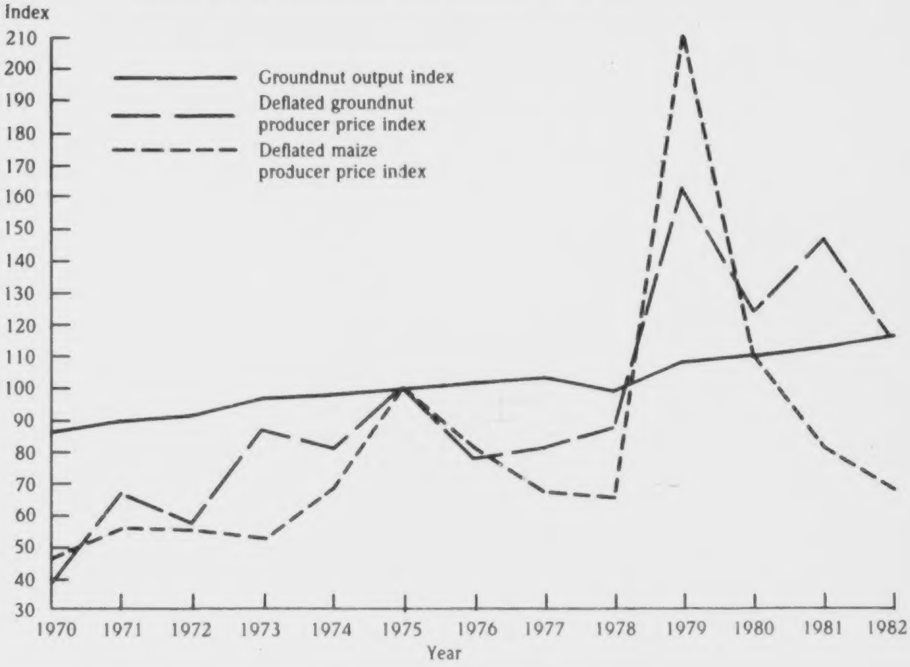
[59] T. Ademola Oyejide, *The Effects of Trade and Exchange Rate Policies on Agriculture in Nigeria*, Research Report 55 (Washington, D.C.: International Food Policy Research Institute, 1986).

Figure 7—Indexes of groundnut output, and of the deflated maize producer prices for groundnuts and maize, 1970-82



Sources: Calculated from unpublished data provided by the Government of Zaire.

negative, suggesting a possible conflict between maize and cotton in production. Because the regression coefficient for the price of cotton is not statistically different from zero, one could infer that a change in the price of cotton does not present a real threat to maize production. Unlike maize, cotton is marketed in Zaire through official channels, which are poorly organized and unreliable. Farmers may not be prepared under these conditions to significantly curtail the production of maize, a secure source of cash income, even if the relative prices favor cotton. This explains at least partly why the cotton producer price is not a significant variable affecting maize output in Zaire.

Figure 8 shows increasing trends in both output and producer prices for maize during 1970-82. While the cotton producer price was declining, maize output was increasing but at a moderate rate. Figure 8 indicates a somewhat close relationship between maize output and maize and cotton producer prices. The regression analysis, however, does not forcefully bring out these relationships.

Table 32—Regression results for maize, 1970-82

Independent Variable	Dependent Variable: Q Maize			
	Equation A	**Equation B**	**Equation C**	**Equation D**
Constant	73.501 (16.849)[a]	101.821 (29.204)[a]	70.119 (4.790)[a]	96.077 (30.763)[a]
P_1 maize	−0.018 (−4.876)[a]	−0.011 (−1.448)	...	...
P_1 cotton	0.073 (6.532)[a]	−0.068 (−2.598)[b]	...	...
P_2 maize	...	...	−0.025 (−0.921)	0.022 (1.739)[c]
P_2 cotton	...	...	0.105 (1.429)	−0.018 (−0.444)
Wage	−0.130 (−5.713)[a]	−0.106 (−2.019)[b]	−0.153 (−1.344)	−0.040 (−0.689)
Trend	2.981 (6.547)[a]	... ...	3.330 (1.879)[c]	... ...
R^2	0.95	0.89	0.96	0.96
ρ	−0.075 (−0.261)	−0.300 (−1.091)	−0.027 (−0.089)	0.290 (1.004)
Degrees of freedom	6	5	7	6

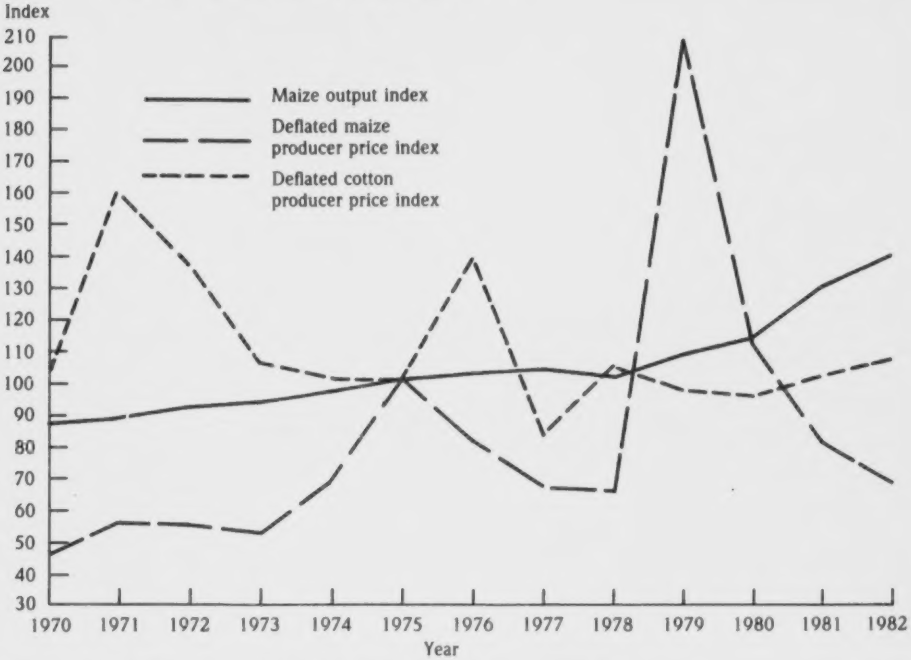
Notes: P_1 stands for the producer price lagged one year (P_{t-1}). P_2 is the weighted average producer price for three years ($[3P_{t-1} + 2P_{t-2} + P_{t-3}]/6$). Q stands for quantity.

The numbers in parentheses are t-values.

The first step of the two-step full transform method is to estimate the model using ordinary least squares. Then the autoregressive parameter ρ is estimated. The values of ρ are not significant.

[a] Significant at the 1 percent level.
[b] Significant at the 5 percent level.
[c] Significant at the 10 percent level.

Figure 8—Indexes of maize output, and of the deflated producer prices for maize and cotton, 1970-82



Sources: Calculated from unpublished data provided by the Government of Zaire.

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CEREAL FEED USE IN THE THIRD WORLD: PAST TRENDS AND PROJECTIONS TO 2000

J. S. Sarma

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CONTENTS

Foreword

1. Summary 9

2. Introduction 12

3. Cereal Feed Situation in 1980 15

4. Trends in Cereal Feed Use 20

5. Growth in Cereal Feed Use in Taiwan and the Republic of Korea 30

6. Dynamics of Demand for Food and Feedgrains in Selected Developing Countries 35

7. Projections of Cereal Feed Use in Developing Countries 41

8. Conclusions and Policy Implications 47

Appendix 1: Data and Methodology 53

Appendix 2: Classification of Countries Selected for the Study 56

Appendix 3: Supplementary Tables 60

Bibliography 67

TABLES

1. Estimated sources of livestock feed in the world 14
2. Distribution of cereal feed use, by region, 1980 17
3. Output of meat, milk, and eggs in livestock output units and cereal feed use, 1980 18
4. Distribution of cereal feed use by region and commodity, 1976-80 average 22
5. Trends in the feed use of grains, by region and commodity, 1966-70 and 1976-80 22
6. Annual growth rates of use of brans as feed and output of cereals, by region, 1966-70 and 1976-80 23
7. Regional distribution and trends of output of livestock products, 1966-70 and 1976-80, and distribution of population, 1980 23
8. Cereal feed use, classified by level and growth of per capita income and growth of livestock output, 1966-70 and 1976-80 26
9. Rate of growth of use of cereals for food and feed, by region, 1966-70 and 1976-80 27
10. Exports, imports, and net trade in coarse grains, 1966-70 and 1976-80 averages 27
11. Ratios of prices received by farmers for poultry and pigmeat to maize, selected countries, 1967-80 29
12. Average production and trade of cereals and livestock products, feed use, per capita income, and population, Taiwan, selected years 32
13. Per capita consumption per year, Taiwan, selected years 32
14. Average production and trade of cereals and livestock products, Republic of Korea, selected years 33
15. Per capita consumption per year, Republic of Korea, various years 34
16. Three scenarios for income elasticities of demand 37
17. Projected growth in food and feed use of cereals, 1980-2000 and average income elasticity of demand for food and feed, selected countries 39
18. Cereal feed use projections under alternative assumptions, by region, 1990 and 2000 44
19. Projected cereal feed use in 75 selected countries, by per capita income groups, 1990 and 2000 45
20. Classification of developing countries by per capita income, income growth, and livestock output growth 56
21. World cereal feed use and total output of cereals by type, 1980 60
22. Cereal feed use by type, 1980 60
23. World livestock numbers, 1980 61
24. Trends in cereal feed use, by region, 1966-70 and 1976-80 61
25. Cereal feed use of grains and brans and by-products, by region and commodity, 1966-70 and 1976-80 62
26. Cereal feed use and total livestock output, by region and subregion, 1966-70 and 1976-80 63
27. Production of compound feed, selected developing countries, 1974-76 average and 1980 63

28. Income elasticity of demand for cereals and livestock products, selected countries, 1980 and 2000 64
29. Ratio of foodgrains to food and feedgrains, selected countries, 1980 to 2000 65
30. Selected developing countries with cereal feed use exceeding 500,000 metric tons, 1980 65
31. Cereal feed use projections under method 1, 1990 and 2000 66

ILLUSTRATIONS

1. World distribution of cereal feed use by crop, developed and developing countries, 1980 15
2. Trends in feed use of cereals in the study countries, by crop and region, 1966-70 and 1976-80 21
3. Growth rates of cereal feed use and livestock products output, by region, 1966-70 and 1976-80 24
4. Trend cereal feed use in 1980 and projections to 1990 and 2000, by region, based on projected livestock output 45

FOREWORD

Use of cereals for livestock feed is growing rapidly in developing countries and is reaching significant proportions. This fact has profound implications for food security of low-income people, employment, and the size of markets available to exporters of cereals. However, developing countries vary greatly in their pace of growth in the use of cereals for feed, even within similar income groups. J. S. Sarma analyzes not only the underlying causes of the rapid growth in cereal use for feed, but also the extent of participation among countries and some of the reasons for the variation. From this analysis comes an understanding of the forces driving future usage and a basis for understanding and modifying the projection of future feed use, which he provides.

Sarma's work continues a stream of IFPRI research concerned with the analysis and projection of global forces of supply and demand for food. It is a sequel to Research Report 49, *Livestock Products in the Third World: Past Trends and Projections to 1990 and 2000,* which provides the background on livestock supply and demand in developing countries essential to understanding the complexities of feed utilization. *Food in the Third World: Past Trends and Projections to 2000,* Research Report 52, also recently published, analyzes past trends and projections of the supply and demand for basic food staples. Because of the rapidly growing importance of the use of basic food staples as livestock feed, and much greater uncertainty about the key variables determining feed supply and demand, Sarma's in-depth analysis is of particular importance.

An intimate knowledge of basic data sources and their problems is essential in dealing with the particularly imprecise data on livestock and feed sectors in developing countries. Sarma brings to this task an important set of skills. He was formerly chief executive officer of the National Sample Survey Organization in India and, prior to that, head of the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India. He has also served as a member of the FAO Statistics Advisory Committee.

Particular note should be taken of the period 1966-80, which is used as the data base for growth rate projections in this report. Questions have been raised on whether this is an appropriate base period, for, by past standards, most of this period was one of high growth in per capita incomes in developing countries, which in turn led to a rapid rise in livestock consumption. Subsequently, however, because of recession and protectionism in the Organization of Economic Cooperation and Development countries and mounting debt repayment problems, economic growth in the developing countries has slowed down. On the one hand, using data from the period of rapid growth could lead to overestimation. On the other hand, one may reasonably argue that the development process in developing countries should accelerate as trained people and institutional capacity expand, thus leading to economic recovery and better economic performance in the coming years. Thus projections based on the 1966-80 trends would be more likely to reflect the effects of overcoming current structural problems and returning to the underlying process of growth.

Finally, the importance of livestock feed issues to traditional global concerns about food security and employment have not been generally recognized. We at IFPRI hope that Sarma's seminal piece will stimulate a large amount of additional analysis and hence a rapidly improving basis for policy in this crucial area.

John W. Mellor

Washington, D.C.
December 1986

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1

SUMMARY

Use of cereals for livestock feed in developing countries has increased much faster than direct food use during the last two decades. Cereal feed also grew faster than production and consumption of livestock products, such as meat, milk, and eggs; and projections to 1990 and 2000 indicate that with rising per capita incomes, these trends are likely to intensify. Many of the developing countries are meeting the increased demand for livestock products through accelerated domestic production. Much of this increase in production has occurred outside the traditional livestock sector, which in turn has resulted in a rapid rise in the derived demand for cereal feed.

Moreover, livestock (including poultry) production is an important source of rural income and employment in the Third World. When it is based on labor-intensive technology, its development helps meet equity objectives by contributing cash income to small farmers and improving their nutrition. Because an assured supply of feed is an essential prerequisite for this development, the use of cereals for feed will probably continue to grow rapidly.

In 1980, about 680 million metric tons of cereals, including by-products, were used as livestock feed in the world. The developed countries used about three-fourths and produced nearly two-thirds of the global livestock output in that year. The remaining one-fourth was fed to livestock in developing countries (including China). Among the cereals used as feed, three-fourths of the world total was coarse grains, especially maize and barley. About 82 percent of coarse grains produced in developed countries was fed to livestock, whereas only about 46 percent went to feedgrains in developing countries.

In 1980, Third World countries (excluding China) used about 100 million metric tons of cereals as livestock feed, of which less than two-thirds was coarse grains and the balance was divided between paddy and wheat. About 85 percent of paddy and 77 percent of wheat were in the form of by-products, mainly bran. For cereal feeds as a whole, by-products constituted a little more than one-third of the total.

Among the developing regions, Latin America used the most cereals for feed—about 43 million metric tons in 1980, of which 86 percent was coarse grains. Asia accounted for 30 percent, nearly half of which was paddy and rice by-products. Sub-Saharan Africa used the least, only 4 percent of the Third World total.

Between 1966-70 and 1976-80, the use of cereal grains and by-products as feed in the countries studied increased by 57 percent, an average growth rate of 4.6 percent a year. During the same period output of meat, milk, and eggs increased at an average annual rate of 3.4 percent. The rate of growth in feed use outstripped growth of livestock output in all regions.

The increase in cereal feed use was particularly rapid in Taiwan and the Republic of Korea, both newly industrializing economies, where income was growing rapidly and per capita incomes were moderately high. In these economies, where consumption of livestock products increased rapidly, domestic production based on imported feedgrains rose to meet the demand. The amount of feed used per unit of livestock output rose continuously in these two economies, largely because more pigs and poultry were raised, requiring intensive grain feeding. The growth in demand for livestock products and for feedgrains in these economies is indicative of what is likely to happen in Third World countries that achieve rapid economic growth. In many of these countries, however, the increased demand for feedgrains might be met by increased domestic production.

For the 104 countries studied, imports of coarse grains increased from an average of 5 million metric tons during 1966-70 to about 16.5 million metric tons during 1976-80. The Food and Agriculture Organization of the United Nations estimates that more than three-quarters of the coarse grain imported by developing countries in 1981 were used for feed. Taking into account exports of coarse grains, the developing countries have gone from being net exporters of about 6 million metric tons of grain in the late 1960s to net importers of 3 million metric tons in the late 1970s.

As per capita incomes increase, the income elasticity of demand for cereals for direct consumption as food declines. The much higher income elasticity of demand for feedgrains may also decline but less rapidly. In some developing countries, such as Brazil, the amount of cereals used for feed already exceeds that used for food. As this trend becomes more widespread, the aggregate demand for cereals in developing countries will continue to increase, the decline in consumption as food being more than compensated for by the rise in feed use.

Alternative projections of the demand for cereal feed to 1990 and 2000 in the Third World in this study are based on past trends in cereal feed use and in livestock output. Five alternative methods result in projections ranging from 151 to 163 million metric tons of cereals used for feed in 1990 and from 245 to 286 million metric tons in 2000. The demand for cereal feed is projected to grow at rates varying from 4.7 to 5.5 percent per year to sustain an average growth in livestock products projected for 1980-2000 at about 3.7 percent.

Projections of the International Food Policy Research Institute (IFPRI) of the food deficit in the Third World, based on the continuation of past trends in production and per capita income, show that the developing countries (excluding China) would have an overall net food deficit of 76 million metric tons of basic food staples, including cereals and other major food crops, by the end of the century. This estimate is based on about 245 million metric tons of cereals used for feed in 2000, which is the lower level of demand projected in this report. If the higher level of demand should materialize, feed use could exceed that level by about 40 million metric tons, pushing the total food deficit to about 116 million metric tons, other assumptions remaining the same.

A recently completed IFPRI analysis of livestock products in the Third World also shows that if past income trends continue, trend projections of meat and milk output could fall considerably short of the projected demand at constant relative prices by the end of the century. The domestic output of meat and milk would have to increase 50 percent faster than past output trends to avoid significant pressure on prices or increases in imports. Under the alternative assumption of slower income growth, which is 25 percent less than trend growth, livestock production would still have to expand at rates higher than the 1961-77 trends to meet the projected demand. Thus, the derived demand for cereal feed could be even larger than projections based on trend estimates of output.

Because value added in the production, processing, and manufacture of meat, eggs, and dairy products is high, many of the developing countries may attempt to accelerate domestic production by introducing trade policies that favor imports of feedgrains rather than of meat and dairy products and by encouraging research and investment in intensive livestock production. Taste preferences for fresh meat, eggs, and milk over frozen or packaged meat, egg powder, or dry milk powder may reinforce such a policy. With economic growth and improved provision of refrigerated storage, transport, and marketing facilities, constraints on marketing and processing of perishable products may be eased, encouraging more rapid expansion in production and consumption of livestock products in the coming years. And because assured supply of livestock feed is an essential prerequisite for the development of livestock output, the use of cereals for feed would continue to grow rapidly.

Where gaps between the projected demand and supply of cereals used for feed cannot be met by imports, market forces could lead to higher meat and cereal prices, which might worsen the food situation for the poor. Therefore, policies concerning cereals and livestock need to be reviewed and modified. For example, in countries with a surplus of rural labor a conscious decision should be made to adopt labor-intensive livestock production strategies to meet equity objectives: increased employment, improved nutrition, and food security for low-income people in developing countries. Improvements in the yields of feedgrains and in feed efficiency through emphasis on research and development of feed technology could also partly alleviate the situation. In addition, the scope for substituting noncereals, such as cassava supplemented with proteins, for cereals in compound and mixed feeds needs to be explored. Increased production of fodder also should be considered. However, as growing demand for feeds and fodder increase competition for land, it will have to be used more intensively. And large allocations of research resources will have to be made to development of new sources of feed, greater use of by-products and agricultural wastes, and of compound and mixed feeds.

A basic problem with the analysis of feed trends is the lack of reliable data on their use by type of feed and by category of livestock output. Developing countries should take steps for collection and publication of data on livestock feed and fodder, including data on compound and mixed feeds collected from existing feed manufacturing industries and data on cereals used directly as feed out of farmers' home-grown or purchased grains.

2

INTRODUCTION

A recent analysis of past trends in livestock products[1] in the developing countries shows that if these trends continue into the future, domestic demand for meat and milk could grow faster than indigenous production, leading to the emergence of large gaps between the two by the end of the century.[2] If the rapid income growth attained during 1966-77 continues, the consumption of meat may increase 5.0 percent a year, whereas milk consumption may rise 3.9 percent a year during the 1977-2000 period. Production is projected to grow by 3.4 percent a year for meat and 2.9 percent a year for milk during the same period. As a group, the 104 Third World countries included in the study, which had a surplus of 300,000 metric tons of meat in the mid-1970s, have already become net importers: by 1981 their net imports had risen to more than 1 million tons.[3] These countries imported nearly 9 million tons, net of exports, of milk and milk products in whole milk equivalents in the mid-1970s, and their net imports rose to about 16 million tons by 1981.[4] The deficits in these products could widen further by 2000, even if the rate of growth of output achieved during 1961-77 continued into the future. For eggs, the projected supply and demand would nearly balance, provided production by 2000 is three to four times the level attained in the mid-1970s. Even for meat and milk the projected outputs depend upon a twofold expansion of the levels of the mid-1970s. Even if per capita incomes increase less rapidly, that is, a quarter less than the 1966-77 rates, the projected shortfalls of meat and milk would still be large compared to the past, unless the output growth rate is accelerated.

Livestock is an important source of income and employment in the rural economy of Third World countries. It supplies essential inputs to crop production through the provision of draft power and manure for improving soil fertility. Development of livestock production can also help to meet the equity objective of rural development through the sector's contribution to cash incomes of small farmers, particularly in areas where a labor-intensive rural livestock development strategy is adopted. Increased income and employment are also realized through the value-adding industries associated with these products. Additional employment is generated by slaughterhouses, transport services, and the marketing of livestock products and feeds. Because livestock products contain high quality protein, their increased consumption could lead to improved nutrition in both urban and rural areas where protein intakes are particularly low. The livestock sector also contributes to foreign exchange earnings, especially in Latin America. For all of these reasons developing countries need to pay increasing attention to the development of the livestock sector in the coming decades. And, to sustain rapid growth in livestock production, large increases in livestock feed supplies will be essential.

Livestock feed is the most important input in livestock industry, no matter in what size farm or enterprise it is organized. Based on the source of origin and end use, livestock feed may be classified into feedgrains, other staple crop feeds, high protein meals, agriculture and household by-products, and forage and fodder crops. Essentially, animals convert plant materials into edible products. Feeds provide the metabolic energy (in calories), proteins, and other nutrients, and these vary from feed to feed. Feed requirements can be differentiated according to the quantities needed for maintenance of the animals and those required for conversion into products. The standard requirements of different types of feed for different species of animals are usually drawn up in feed schedules designed to suit different environmental conditions for given levels of production. Such schedules, which often take into account the costs of feed and of output, are generally adopted by commercial or semicommercial farmers or government research stations and farms. But a majority of the rural smallholders and traditional graziers feed their livestock with locally available materials, including farm by-products, supplemented occasionally with concentrate feeds. These unbalanced and often inadequate diets, the traditional breeds of animals raised, and the prevalence of diseases explain the low productivity in output per animal on small farms in many developing countries.

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[1] Hereafter in this report the term "livestock" includes poultry.

[2] J. S. Sarma and Patrick Yeung, *Livestock Products in the Third World: Past Trends and Projections to 1990 and 2000,* Research Report 49. Washington, D.C.: International Food Policy Research Institute, 1985.

[3] This study includes data for 104 countries referred to in this report as "the Third World countries." China and 24 very small developing countries are excluded. The term "developing countries," however, includes all of the developing economies.

All tons referred to in this report are metric tons.

[4] Imports of milk include those under food aid.

Livestock feed can also be classified into the following groups: cereals; pulses; roots and tubers; oil seeds, cakes, and meals, and other protein meals including fish meal; molasses and other crop residues and agricultural and household by-products; cultivated fodder crops and grasses; pastures and other grasses; and agricultural wastes. The cereal feedgrains include coarse grains (such as maize, sorghum, millet, barley, oats, rye, and other cereals not elsewhere specified), wheat, and paddy (rice in husk), and their products and by-products. Cereal products are processed grains such as milled and broken rice and flours, and by-products are brans and cakes.

Feedgrains and roots and tubers provide a large share of the energy requirements of poultry and intensively fattened animals. Large ruminants such as cattle and small ruminants such as sheep and goats depend on forages and grass supplemented by feedgrains and protein meals for the bulk of their energy. Agricultural by-products such as straw and fodder stalks, which can be stored for the dry season, are also an important source of animal feed, particularly in developing countries. Feedgrains form 3.3 percent of the total estimated sources of livestock feed by weight and 16.6 percent in terms of energy in the world (Table 1).

The major difficulty in the analysis of past trends of livestock feeds is the nonavailability of reliable time-series data on their production and use in a number of developing countries. In many countries, separate annual data on grains used as feed are not systematically collected. Often such data are derived as a fixed percentage of production or supply, and hence the annual variations in feed use based on the published data for some countries do not reflect the true variations.[5] In countries where the commercial livestock sector is important, data on feed utilization are obtained and used to arrive at the total feed use for the year. The data used in this study are based on information obtained from the Food and Agriculture Organization of the United Nations.[6] (See Appendix 1 for additional discussion of the data and methods used.)

Another major difficulty is that information on feed use by species of livestock or type of livestock product is often not available. Apart from meat, milk, and eggs, draft power is one of the important uses of livestock in developing countries, but separate data on feed use by draft animals are not

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[5] FAO's food balance sheets for 1975-77 specifically caution, "Since the quantities for feed and waste shown in the food balance sheets are often estimated from various sources, the percentage figures should be seen in conjunction with the balancing equation for the commodity in question in the food balance sheets and should not be judged on its own" (Food and Agriculture Organization of the United Nations, *Food Balance Sheets, 1975-77, Average and Per Caput Food Supplies* [Rome: FAO, 1980]).

[6] Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981" Rome, 1982.

Table 1—Estimated sources of livestock feed in the world

Feed	In Tonnage[a]	In Energy[b]
	(percent)	
Grain	3.3	16.6
Protein meal or cakes	0.5	2.3
By-products	1.7	6.2
Forages and others	94.5	74.9
Total	100.0	100.0

Source: R. O. Wheeler, et al., *The World Livestock Product, Feedstuff and Food Grain System* (Morrilton, Arkansas: Winrock International, 1981).

[a] Based on projected tonnage for 1985.

[b] Based on energy estimates for 1977/78.

collected.[7] Thus it is difficult to relate directly the feed use data with those for livestock output. As the grains produced within the country and those imported are both used as food and feed, it is difficult to build up a time series of production of feedgrains. Thus the trend analysis in this study is confined to feed use of grains only and not to their output. In view of the growing importance of feedgrains to sustain a rapidly growing livestock output in the coming years, the study attempts to analyze the available data despite these limitations.[8]

The analysis in this report covers the same 104 developing countries (excluding China) that are covered in *Livestock Products in the Third World.*[9] Of these, 21 are in Asia, 19 in North Africa/Middle East, 40 in Sub-Saharan Africa, and 24 in Latin America. Each of these regions is subdivided into two or three geographical subregions. For a classification of the countries, see Appendix 2, Table 20. China is excluded because no consistent and comparable time-series data on livestock products or feed use for mainland China, based on government series, are available.

The analysis of past trends is generally based on the averages for 1966-70 (the late 1960s) and 1976-80 (the late 1970s).[10]

Chapter 3 discusses the current situation for the use of cereal feed in 1980 and gives the corresponding figures on livestock numbers and output in 1980 to serve as background. Chapter 4 considers trends in aggregate cereal feed use and livestock output between the late 1960s and 1970s by regions and subregions and other typologies based on per capita income levels, per capita income growth, and growth in livestock output in the different countries. Chapter 5 examines developments in Taiwan and the Republic of Korea, where feed use has expanded rapidly in the last two decades.

As incomes rise beyond certain levels, per capita consumption of cereals directly as food declines and consumption of livestock products increases, resulting in increased derived demand for feedgrains. The dynamics of the combined use of cereals for food and feed are examined in Chapter 6, with illustrations from selected countries. Chapter 7 gives the main projections for feed use for 1990 and 2000 based on alternative methods and assumptions. The main conclusions of the study and their policy implications are given in Chapter 8.

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[7] Moreover, in some developing countries a clear distinction is not maintained between animals used for draft power or for milk and those slaughtered for meat.

[8] This study is part of a series on past trends and projections prepared by the International Food Policy Research Institute, and its findings are derived in part from two earlier studies. See Leonardo Paulino, *Food in the Third World: Past Trends and Projections to 2000,* Research Report 52 (Washington, D.C.: International Food Policy Research Institute, 1986); and Sarma and Yeung, *Livestock Products in the Third World.*

[9] FAO publications do not give separate data for Taiwan but include them under China. Thus Taiwan is also not included in the 104 countries or in the Asia region. However, the case study on Taiwan discussed in Chapter 5 is based on data taken from Republic of China, Council for Agricultural Planning and Development, *Taiwan Food Balance Sheets, 1935-1980,* (Taiwan: Republic of China, 1981). These are not strictly comparable with FAO data and hence could not be combined with those for the 104 countries.

[10] Time series data on annual domestic utilization of cereals for food, feed, seed, and other uses were available from 1966 only.

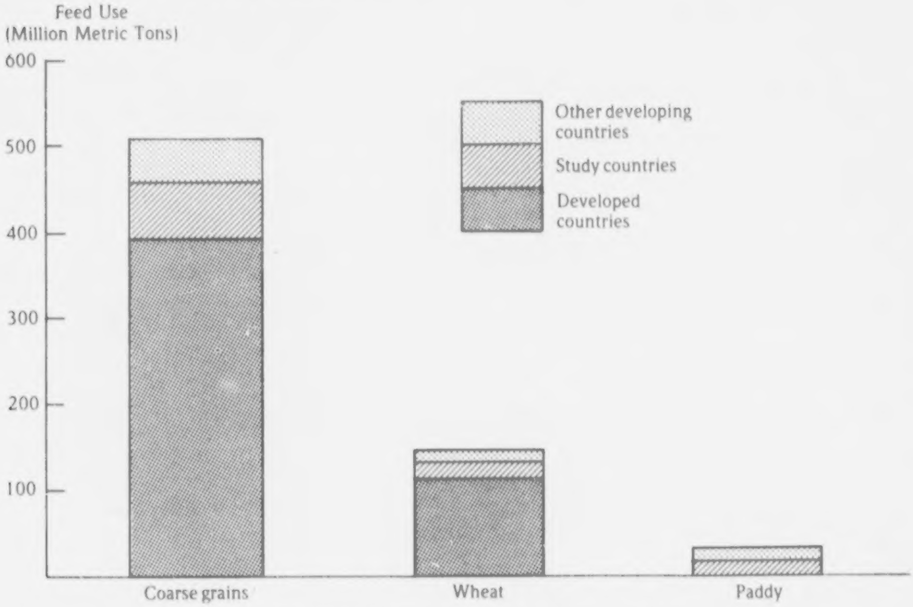
3

CEREAL FEED SITUATION IN 1980

About 680 million tons of cereals, including by-products, were used as livestock feed in the world in 1980. This constituted about 44 percent of the global cereal output (Appendix 3, Table 21). Among the cereals, coarse grains were the most important feedgrains, accounting for about three-fourths of the total. Wheat and its by- products were nearly one-fifth, the balance comprising paddy and its by-products (Figure 1). Seventy percent of world coarse grain production was used as feed, whereas only 8 percent of paddy and its by-products were fed to livestock. Nearly one-third of the global output of wheat (including by-products) was used as feed.

In the aggregate, developed countries used three times more grain to feed their livestock than the developing countries. About three-fourths of total cereal feed was used in the developed countries, which produced nearly two-thirds of the world's livestock output in 1980. Coarse grains—the major feedgrains—provided more than three-fourths of the total grains fed in the developed countries: about 82 percent of coarse grains produced was fed to livestock. Although coarse grains are also the pre-

Figure 1—World distribution of cereal feed use by crop, developed and developing countries, 1980



Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Note: Other developing countries include China and 24 small countries that are excluded from the study countries.

ferred feed in developing countries, about 46 percent of their domestic production is used as feed.

In 1980, about one-sixth of the cereals used as feed in the world was actually by-products, mostly bran. At 83 percent, the proportion of by-products was the highest for paddy. Only 5 percent of coarse grains fed was in the form of by-products; the proportion for wheat was about 37 percent. Again there were significant differences between the developed and developing countries in the use of by-products as feed—the respective shares being 9 percent in the former and 36 percent in the latter.

In the 104 study countries, about 100 million tons of cereal grains and by-products were fed to livestock in 1980—nearly 15 percent of the world feed use and 60 percent of their use in developing countries (including China). Of this quantity, two-thirds was coarse grain and the balance was divided almost equally between wheat and paddy (Table 2). Eighty-five percent of paddy, 77 percent of wheat, but only 10 percent of coarse grains were fed in the form of by-products. The share of by-products of wheat, paddy, and coarse grains in total feed use was a little more than one-third in the Third World countries in 1980. Feed use of cereals by type of product or by-product in 1980 is given in Appendix 3, Table 22.

As one would expect, Latin America, with its predominant share in the output of meat, milk, and eggs in the Third World, leads in the feed use of grains. All but one country (Haiti) in this region are in the middle- or high-income range. Meat is a staple food in some of these countries, especially Argentina and Uruguay. In 1980, about 43 million tons of cereals were fed to animals in this region. The share of coarse grains was nearly 86 percent. Asia followed with 30 million tons consumed as feed, but nearly half of this was in the form of paddy, rice bran, and other rice products and by-products. This is understandable because Asia produced 88 percent of the paddy in the study countries. Sub-Saharan Africa, which produced the smallest quantities of meat, milk, and eggs, also used the smallest amount of feedgrains, mainly coarse grains. More than two-thirds of the livestock feed in North Africa/Middle East was also in the form of coarse grains, particularly barley (9.2 million tons). About 14 million tons each of rice and wheat bran and other by-products were fed to animals in the four regions, taken together. Of the 65 million tons of coarse grains used as feed in the study countries, a little less than 57 percent was in Latin America, followed by about 24 percent in North Africa/Middle East.

Of the coarse grains, 39.1 million tons were maize, 10.4 million tons were barley, 11.7 million tons were sorghum, and the rest were other grains such as millets, oats, and rye. Sorghum was mainly used as feed in Latin America. In the case of wheat and its by-products, North Africa/Middle East is reported to have used about 40 percent of the Third World total for feeding its livestock. Two-thirds of this was wheat bran. About half a million tons of wheat bran were used as feed in Sub-Saharan Africa.

More than half of the cereal feed used in Latin America in 1980 was in the Upper South America subregion. In North Africa/Middle East, 70 percent was used in Western Asia; in Sub-Saharan Africa, nearly half was used in Eastern and Southern Africa; and in Asia, 57 percent was used in East and Southeast Asia.

As explained earlier, China is not covered by the analysis of past trends and projections because of a lack of adequate time-series data on feed use. According to recent FAO estimates, however, nearly 70 million tons of cereals were fed to livestock in China, including Taiwan, in 1980—slightly more than 10 percent of world cereal feed use. Coarse grains constituted 63 percent of the feed used in China.

Because the details of cereals fed to different species of livestock are not available, it is not possible to relate feed use to the number of animals in the different regions. However, Appendix 3, Table 23 shows that although nearly two-thirds of the world's large and small ruminants and 50-60 percent of pigs and poultry are in the developing economies (including China), they use only about a quarter of the cereal feed. This indicates a larger use of pastures and grazing

Table 2—Distribution of cereal feed use, by region, 1980

Region	Coarse Grains	Paddy	Wheat	Total	Share of By-Products (Including Bran)
			(million metric tons)		
Asia	9.4	15.0	5.7	30.2	20.6
North Africa/Middle East	15.5	0.3	7.2	23.0	5.4
Sub-Saharan Africa	3.2	0.3	0.5	4.0	2.5
Latin America	37.0	1.5	4.7	43.2	6.1
Total	65.1	17.1	18.1	100.3	34.6

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.
Note: Parts may not add to total due to rounding.

lands as well as low-cost agricultural wastes and by-products for direct consumption as feeds in these countries.[11] Although at the regional level the proportion of ruminants, large and small, was higher in Asia than in Latin America, the proportion of feed use of cereals in the latter was higher, perhaps because Latin America has the largest number of pigs and poultry.

The developed economies, with almost one-quarter of the world population, produced nearly two-thirds of the meat, three-fourths of the milk, and three-fifths of the eggs in 1980, which shows the wide disparity in per capita production between the developed and developing economies. The 104 countries covered by this study shared roughly one-fifth of each of these products as compared to their share of 50 percent of global population in the same year. Among the regions, Latin America produced nearly half of the meat, one-third of the milk, and nearly two-fifths of the eggs in the Third World. Asia led in the production of milk with about 40 percent of the aggregate for the study countries. The output of all three products was extremely low in Sub-Saharan Africa, much lower than its 15 percent share of the population (see Table 3).

Table 3 also gives quantities of cereals fed to livestock in 1980. Because the weights of the three products are expressed in different terms, it would not be appropriate to add the output of each of the three products, ton for ton, and compare the total with the livestock feed use given in the table. Each of the outputs needs to be converted to a common denominator before they are aggregated to obtain the feeding ratio. Milk is the main problem because fresh milk contains 87-88 percent water. Often international trading is done in dry milk powder or in condensed and evaporated milk, which has a much lower percentage of water. One method of aggregation is to reduce milk to its dry weight by dividing by 10 (an average figure). The results are given in brackets below the fresh milk figures. When the weights of meat and eggs are added, the total is expressed as livestock output units (LOUs). In this method no correction factor is applied for meat or eggs, which also contain water.

Another method of aggregating the outputs would be to combine them on an energy basis because cereal feeds primarily provide energy to the animals. The energy content of various types of livestock products is expressed in physiological fuel values (PFVs).[12] The feeding ratio would represent

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[11] Agricultural wastes and by-products are also used in the developed countries but mostly as ingredients of compound feeds.

[12] The individual PFVs expressed in 1,000 calories per kilogram of fresh product weight are: buffalo and cattle meat (carcass weight), 2.31; sheep and goat meat (carcass weight), 2.00; pigmeat, 4.20; poultry meat, 1.40; cow's milk, 0.62; buffalo milk, 1.00; sheep milk, 1.12; goat milk, 0.75; eggs, 1.50 (Winrock International, *Role of Ruminants in Support of Man* [Morrilton, Arkansas: Winrock International, 1981]).

Table 3—Output of meat, milk, and eggs in livestock output units and cereal feed use, 1980

Country Group/Region	Output				Cereal Feed Use	Feeding Ratio[b]
	Meat	Milk[a]	Eggs	Livestock Output Units		
	(million metric tons)					
World[c]	137.8	470.0 (47.0)	28.7	213.5	681.4	3.2
Developed economies	88.0	362.3 (36.2)	18.0	142.2	506.9	3.6
Developing economies (including China)	49.8	107.8 (10.8)	10.8	71.4	174.6	2.4
104 study countries (excluding China)[d]	27.0	99.3 (9.9)	5.3	42.2	100.3	2.4
Asia	5.8	43.8 (4.4)	1.6	11.8	30.2	2.6
North Africa/Middle East	3.5	16.4 (1.6)	0.8	6.0	23.0	3.8
Sub-Saharan Africa	3.5	5.9 (0.6)	0.5	4.5	4.0	0.9
Latin America	14.2	33.3 (3.3)	2.3	19.9	43.2	2.2

Sources: All figures are derived from data of the Food and Agriculture Organization of the United Nations (FAO). World data are from FAO, *Production Yearbook 1982* (Rome: FAO, 1983); country data are from FAO, "Production Yearbook Tape, 1981," Rome, 1982; and the cereal feed use data are from FAO, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Notes: In this table, the output of meat is expressed in carcass weight, milk in whole fresh milk equivalents, and eggs in fresh weight. Livestock output units are weights of meat, milk, and eggs converted to a common denominator to obtain a total for livestock products. Milk is reduced to its dry weight by dividing by 10; then weights of meat and eggs are added. Meat includes beef, veal, buffalo meat, mutton and goat meat, pig and poultry meat; and milk includes cow, buffalo, sheep, and goat milk; eggs include hen eggs and other eggs. Parts may not add to total due to rounding.

[a] The figures in parentheses refer to dry milk equivalents.

[b] Feeding ratio is the average quantity of cereals and by-products used to produce one unit of livestock products.

[c] These countries are grouped according to the classification system of the Food and Agriculture Organization of the United Nations.

[d] These countries are grouped according to the classification system of the International Food Policy Research Institute.

the cereal feed use per unit of PFV.

Whereas there would be no difficulty in using PFVs by type of meat and milk in the analysis of past trends of specific commodities, using individual energy values to obtain the aggregate of livestock products is difficult, particularly when output projections for the future are based on the aggregates for meat and milk, and not by the types of meat and milk. For cereal feeds, although the energy content of each cereal grain is different, the quantities of all the grains are aggregated ton for ton. It is also possible to convert the cereals into energy equivalents and to work out a ratio of the energy equivalents of cereal feeds and livestock outputs, but as a feeding ratio this coefficient has limited use.

Another method takes into consideration the input/output ratios of each of the livestock products. But these vary considerably from country to country and over time for the same species of livestock depending upon the composition of the feed, techniques of production, and so forth. In general the input/output ratio for milk varies from 0.3 to 0.4:1. For meat, it varies widely between types. For example, the ratio is 2 to 3:1 for intensively fed chicken meat, 4 to 6:1 for intensively fed pigmeat; and even higher for intensively fed beef. For traditionally raised, home-produced livestock products the ratios are much lower. On average, the feeding ratio may be taken to be around 3 to 4:1 for meat and eggs. In other words, the grain feed required to produce one unit of fresh milk is about one-tenth of that required for meat or eggs. This also suggests that dividing the milk output by 10 for converting into LOUs is reasonable, though this understates the importance of milk from a nutritive point of view, but not from a feed use point of view.

Although this method of dividing milk output by 10 and adding it to the output of meat and eggs is somewhat rough, it seems to be a better indicator of total livestock production than the one obtained by adding meat, milk, and eggs ton for ton for the limited purpose of working out the feeding ratios. Thus, the output of meat, milk, and eggs is converted into LOUs in Table 3.

The total cereal feed use in the different regions still cannot be compared with the total output of livestock products because the feed data include quantities fed to draft animals and those fed to other animals such as young calves and cows not in milk, for which no separate data are available. In interpreting the data on cereal feed use and livestock output in the different regions in Table 3, these limitations must be kept in mind. It will be seen that the average ratio of feed used for one unit of livestock output—the feeding ratio—comes to 2.4 in 1980 for the study countries as a whole.

Despite the limitations of the data, they show that the feeding ratio in developing countries is about two-thirds of that for developed countries. The lower ratio in developing countries suggests that they rely more on nongrain feeds, such as pasture, straw, and agricultural wastes for feeding cattle, which, though cheaper, reduce the output per animal. Among the study countries, the ratio is high in North Africa/Middle East and low in Sub-Saharan Africa. The composition of meat by type and the livestock production technology and feeding practices adopted also partly explain the regional differences in the ratios.[13]

To the extent that improved livestock production technologies are more feed-intensive, these technologies increase the demand for feedgrains. Thus, in areas where poultry, pig, and dairy production have expanded through commercial or semicommercial enterprises, the manufactured feed industry has also developed, thereby increasing the demand for cereal feeds. This increased demand has been met by imports where domestic production is inadequate.

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[13] A disaggregated analysis of meats by type would have thrown more light on the variation in the ratios, but data on feed use by type of meat are not available.

4

TRENDS IN CEREAL FEED USE

Use of cereals for feed in the Third World countries increased faster than the output of meat and milk. The quantity of cereal grains and by-products fed to livestock rose from 57 million tons a year in 1966-70 to 90 million tons in 1976-80, an average rate of 4.6 percent a year (see Appendix 3, Table 24 and Figure 2).

Among the developing regions, Latin America is a major livestock producer, and this is reflected in the amount of cereals used for feed. In the late 1970s, this region held a 42 percent share of total feed use in the Third World, and it also accounted for 44 percent of the increase between the two periods (Table 4). The 5 percent-a-year rate of growth in feed use in this region is thus a little higher than the average growth rate for the 104 study countries taken together. In North Africa/Middle East, feed use increased from 12.5 million tons in the late 1960s to 20.5 million tons in the late 1970s. At 3.1 percent a year, growth of feed use in Sub-Saharan Africa was the lowest among the four developing regions; this seems consistent with the relatively slow growth rate for output of livestock products in this region. In Asia, which used about 31 percent of total feed, growth in the use of cereal for feed was less than the average for Third World countries, largely because of the slower growth in South Asia and in the use of by-products such as rice bran for feed.

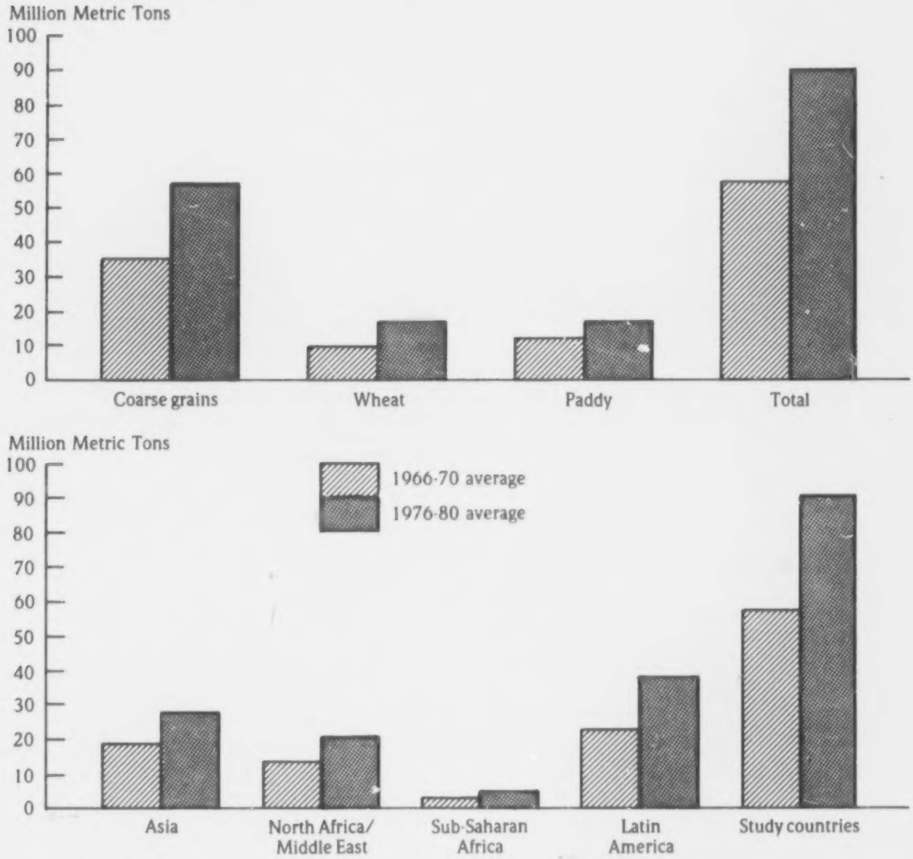
Reaching 56.6 million tons in the late 1970s, feed use of coarse grains increased at a rate slightly faster than that of total cereal feeds between 1966-70 and 1976-80. The growth rates were even higher in Asia and Latin America. Quantities of wheat and paddy used as feed were nearly the same at 17 million tons each in the late 1970s, but the growth in the use of wheat at 5.5 percent was much higher than the 3.0 percent in paddy. Seventy-five percent of the wheat fed was in the form of bran. Consumption of wheat bran increased from 7.5 million tons in 1966-70 to 12.5 million tons in 1976-80, an average annual increase of 5.3 percent. Nearly 90 percent of the paddy fed was in Asia. Again, 85 percent of total paddy feed was in the form of rice bran and cakes in 1976-80, and use of these by-products rose more slowly at 2.8 percent a year. In the case of coarse grains, bran and cakes formed only about 10.5 percent of feed use in the late 1970s, which is less than their 13.6 percent share in the late 1960s.

Among the coarse grains, maize was the preferred feedgrain in Latin America and Asia. In North Africa/Middle East, barley was more important than maize, although maize's share was increasing. In Latin America, maize accounted for three-fourths of the coarse grain fed in the late 1960s. This share declined to about two-thirds in the late 1970s, when about 21.3 million tons of maize were used as feed. The use of sorghum for feed in Latin America increased relative to maize. In Asia, maize's share of coarse grains increased from about 60 percent to nearly 75 percent, largely from imported maize. In North Africa/Middle East in the late 1970s, 8.2 million tons of barley and 3.5 million tons of maize were utilized out of a total cereal feed use of 20.4 million tons. The corresponding figures for the late 1960s were 5.3 million tons of barley and 1.4 million tons of maize out of a total feed use of 12.5 million tons.

Use of Cereal Grains and By-Products

The growth rates and importance of whole grains and by-products varied between regions and commodities. In the aggregate, nearly 64 percent of the cereal feed used in the late 1970s was in the form of

Figure 2—Trends in feed use of cereals in the study countries, by crop and region, 1966-70 and 1976-80



Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply Utilization Accounts Tape, 1981," Rome, 1982.

grains (including grain products) and 36 percent was in by-products, mainly bran and cakes. In the late 1960s grains were 60 percent and by-products 40 percent.

Thus cereal feeds, excluding by-products, increased from about 34 million tons in the late 1960s to 57 million tons in the late 1970s, a growth rate of 5.3 percent a year, which is higher than 4.6 percent for total cereal feed (Table 5 and Appendix 3, Table 25). Latin America held a 56 percent share of this feed use in the late 1970s. Asia exhibited the most rapid growth at 6.3 percent a year. Coarse grains constituted 88 percent of the total in the late 1970s. The use of wheat and wheat flour, however, rose most rapidly at about 6 percent a year, while paddy use increased by 4 percent a year.

Of the total of 33 million tons of cereal by-products, mainly bran, used as livestock feed, rice and wheat held shares of 43 and 38 percent, respectively, in the late 1970s. The coarse grains were fed largely as grains, and their by-products constituted about one-

Table 4—Distribution of cereal feed use by region and commodity, 1976-80 average

Region	Regional Distribution				Commodity Distribution			
	Coarse Grains	Wheat	Paddy	Total	Coarse Grains	Wheat	Paddy	Total
	(percent)							
Asia	15	31	89	31	30	18	52	100
North Africa/Middle East	24	40	2	23	66	32	2	100
Sub-Saharan Africa	5	3	2	4	81	12	7	100
Latin America	56	27	8	42	85	12	3	100
Total	100	100	100	100	63	19	18	100

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.
Note: Parts may not add to total due to rounding.

tenth of the total. Asia used most of the rice bran—about 12.6 million tons out of 14.2 million tons of feed. Wheat bran feed use was distributed more evenly among the three developing regions of Asia, North Africa/Middle East, and Latin America (Appendix 3, Table 25).

Because brans are by-products, growth in their use as feeds depends in part on growth in output of the grains from which they are derived. For example, paddy output in the developing countries increased 2.8 percent a year between the late 1960s and 1970s, which is the same as the growth rate in the use of rice bran as feed during the period. On the other hand, wheat bran use increased by 5.3 percent a year, which was higher than the 4.8 percent-a-year growth in the output of wheat in Third World countries. This is largely because of the increase in net imports of wheat into these countries, either through trade or food aid. It is significant that rice is traded in its milled form, whereas wheat is mostly traded as whole grain. Thus rice bran is available for use in the exporting countries, while wheat bran is more likely to be used in the importing countries. These differences are evident in Table 6, which shows the annual growth rates in the use of wheat and rice brans as feed and the corresponding growth rates in the output of wheat and paddy during the two periods.

In Asia, however, the use of wheat bran as feed grew more slowly than the output of the whole grains, especially in South Asia. Including the use of bran from coarse grains, the use of total cereal by-products increased 3.6 percent during the period, compared to 4.6 percent for all cereal feeds. Moreover, because growth in the use of rice bran was constrained by growth in the output of paddy, any further acceleration in the overall use of cereal feed, particularly in Asia, would have to come from growth in feeds other than rice bran.

Table 5—Trends in the feed use of grains, by region and commodity, 1966-70 and 1976-80

Region/ Commodity	Grains Used for Feed		
	1966-70	1976-80	Growth Rate
	(million metric tons)		(percent)
Asia	4.54	8.35	6.3
North Africa/ Middle East	9.41	15.61	5.2
Sub-Saharan Africa	0.98	1.40	3.6
Latin America	19.29	31.99	5.2
Total	34.21	57.35	5.3
Coarse grains	30.22	50.68	5.3
Wheat	2.37	4.26	6.0
Paddy	1.62	2.41	4.0

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.
Note: Parts may not add to total due to rounding.

Table 6—Annual growth rates of use of brans as feed and output of cereals, by region, 1966-70 and 1976-80

Region	Wheat Bran Feed	Wheat Output	Rice Bran Feed	Paddy Output
	(percent/year)			
Asia	5.9	6.7	2.8	2.8
North Africa/ Middle East	5.5	3.7	−0.4	0.8
Sub-Saharan Africa	6.3	0.7	3.1	2.9
Latin America	4.1	2.8	3.9	3.7
Total	5.3	4.8	2.8	2.8

Rate of Growth

Source: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1981," Rome, 1982; and Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Trends in Output Growth of Livestock Products

When the production of meat, milk, and eggs in each country was converted into LOUs, an average growth rate of 3.4 percent was recorded between the periods 1966-70 and 1976-80. Meat output grew 3.1 percent; milk, 3.0 percent; and eggs, 5.7 percent at annual compound rates. The output of these products increased from 28.3 million tons in the late 1960s to 39.4 million tons in the late 1970s (Table 7 and Appendix 3, Table 26). Less than half of the output during the latter period was from Latin America, although its share of the population was only one-sixth. Asia, with its 58 percent population share, produced only 28 percent of Third World output. Except in Sub-Saharan Africa, where output growth was about 2.2 percent, output in the other three regions grew about 3.5 percent a year.

The annual growth rate in cereal feed use in developing countries outstripped that of the output of livestock products by more than 1.2 percent a year (see Figure 3). In Latin America, feed use growth was 1.5 percent ahead of livestock output growth. The difference between the two growth rates was smallest in Asia, where feed use increased at 4.2 percent a year. These differences are more marked at the subregional level.

Subregional and Selected Country Trends

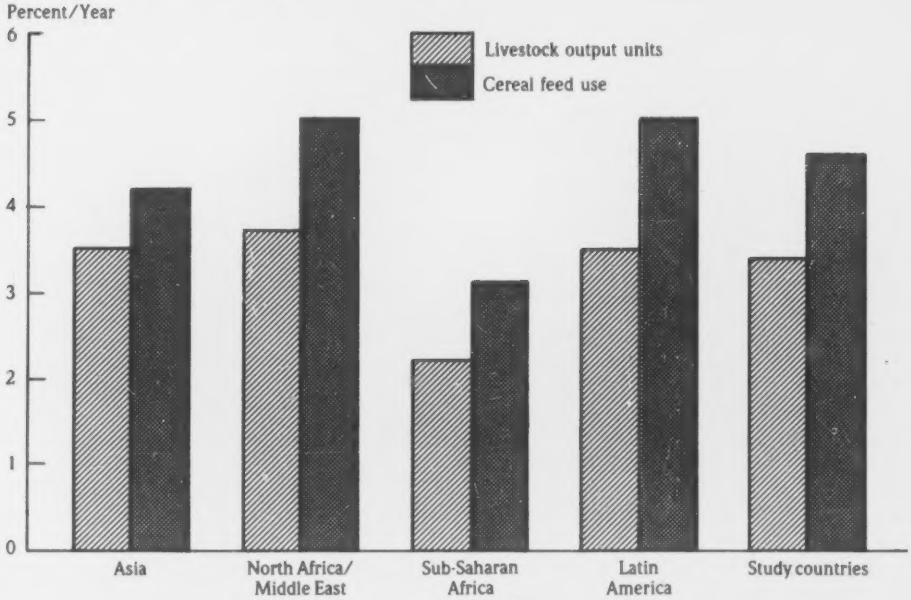
Countries of the Upper South America subregion, which is largely in the tropics, accounted for a little more than half of the cereal feed use in Latin America, as well as a little less than half of the region's livestock output in the late 1970s. The most rapid growth in cereal feed use, however, was in the Central American subregion, which includes Mexico and the Caribbean countries. There livestock feed more than doubled,

Table 7—Regional distribution and trends of output of livestock products, 1966-70 and 1976-80, and distribution of population, 1980

Region	Output in Livestock Output Units 1966-70	1976-80	Annual Average Growth Rate	1980 Population
	(million metric tons)		(percent)	
Asia	7.73	10.94	3.5	58.2
North Africa/Middle East	3.88	5.58	3.7	11.2
Sub-Saharan Africa	3.42	4.24	2.2	14.9
Latin America	13.24	18.59	3.5	15.7
Total	28.27	39.35	3.4	100.0

Source: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1981," Rome, 1982; and United Nations, Department of International Economic and Social Affairs, "World Population Prospects as Assessed in 1982," New York, 1983 (computer printout).

Figure 3—Growth rates of cereal feed use and livestock products output, by region, 1966-70 and 1976-80



Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1981," Rome, 1982; and Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Note: Livestock products are expressed in livestock output units derived as meat + 1/10 milk + eggs.

rising from 5.1 million tons in the late 1960s to 10.4 million tons in the late 1970s (see Appendix 3, Table 26). In comparison, livestock output in this subregion increased only about 60 percent. In temperate Lower South America, growth rates in the use of feed and in livestock output were low during this period—1.5 percent and 1.4 percent. This subregion held a one-fifth share of Latin America's feed use but nearly 30 percent of its livestock output in the late 1970s. Cereal feed use in Latin America was highest in Brazil—15.3 million tons a year on average during 1976-80 compared to 9.6 million tons during 1966-70. In Mexico, feed use doubled from 4.0 million to 8.1 million tons during the same period. Argentina showed a slower growth rate of about 1.5 percent a year, rising from 5.4 million tons to 6.3 million tons during this period.

Of the 28.3 million tons of feed used in Asia in the late 1970s, South Asia accounted for about 13.3 million tons or less than half, whereas this subregion produced about 55 percent of the livestock output. The East and Southeast Asia subregion, which comprised several newly industrializing countries with relatively rapid growth in income, used more than half of Asia's feed. This was more than 70 percent higher than in the late 1960s. The growth rate of feed use was 1.3 percent higher than that of livestock output in this subregion, and nearly double that of South Asia. The Republic of Korea recorded a 13.5 percent yearly increase in feed use. It rose from about 800,000 tons in the late 1960s to 2.8 million tons in the late 1970s. Cereal feed use in India was estimated at about 10 million tons in the late 1970s, although this represented an increase of only 2.8 percent a year compared to the late 1960s. Hong Kong, Indonesia, Malaysia, Mongolia, the Philippines, and Singapore all recorded growth rates of 5 percent or more.

In North Africa/Middle East, Turkey used the largest amount of cereal feed—8.3 million tons in the late 1970s, mostly coarse grains. Turkey's rate of growth in feed use, however, was only 3.2 percent a year. The Western Asia subregion, which included Turkey, had a 70 percent share of the region's feed use and a 65 percent share of livestock output. The growth rate for feed in this subregion was two-thirds that in the Northern Africa subregion. A number of countries in the latter subregion exhibited growth rates exceeding 5 percent a year, including Algeria, Egypt, Libya, Morocco, Sudan, and Tunisia. Feed use in Saudi Arabia increased rapidly, by 29 percent a year, increasing from 42,000 tons in the late 1960s to more than half a million tons in the late 1970s. In many of these countries, rapid growth in per capita incomes through oil revenues resulted in larger demand for livestock products, part of which was met from increased domestic production.

In the late 1970s, more than half of the cereal feed use in Sub-Saharan Africa was in the Eastern and Southern Africa subregion. Central Africa's share was less than 10 percent. These shares are similar to their shares of livestock output. The growth rate for feed use in Eastern and Southern Africa was about 3.0 percent a year, and that for Central Africa was 4.3 percent. In West Africa, feed use increased by 3.1 percent a year. Nigeria used roughly 578,000 tons of cereal feed in the late 1970s, which accounted for about 40 percent of West Africa's feed utilization, as compared to its share of 48 percent of livestock output.

Feed Use by Per Capita Income, Income Growth, and Livestock Output Growth

The utilization of cereals as livestock feed is high in high-income countries. To study this relationship, the countries were classified into four groups: those with a per capita income at 1980 prices of less than $250, $250-499, $500-1,999, and more than $2,000 per year in 1980. Cereal feed use was then aggregated for each group of countries. Feed data were also grouped by two other criteria: per capita income growth during 1961-80 (less than 1.0 percent, 1.0 to 2.9 percent, 3.0 to 4.9 percent, and 5.0 percent and more per year) and by rate of growth in livestock products (less than 1.0 percent, 1.0 to 2.9 percent, 3.0 to 4.9 percent, and 5.0 percent and more) between 1966-70 and 1976-80. The relevant data are given in Table 8.

Of the 104 developing countries included in the study, 20 high-income countries, with average per capita incomes exceeding $2,000 a year, used nearly 43 percent of the feed consumed in developing countries in the late 1970s; this is about the same as their share of livestock output. These countries accounted for only 15 percent of the Third World population. At the other end of the scale, 19 very-low-income countries accounted for about 44 percent of the total population, but their share of feed use was less than one-sixth, and they contributed 18 percent of the total livestock output. The growth rate of feed use in these countries was also low—a little more than half of the growth rate for the developing countries as a whole.

When the countries were grouped according to per capita income growth, countries with medium growth had a 36 percent share of feed use and those with rapid growth, a 27 percent share in the late 1970s. Their respective shares of livestock output were 27 and 21 percent. The growth in feed use in the rapid-income growth countries was a little less than 6 percent a year, which is about 30 percent higher than the overall growth rate. In 27 countries, with one-sixth of the total population, per capita incomes rose less than 1 percent. These countries used only about 8 percent of the total cereal feed and produced only 13 percent of livestock products in the late 1970s.

Finally, the countries were grouped

Table 8—Cereal feed use, classified by level and growth of per capita income and growth of livestock output, 1966-70 and 1976-80

			1966-70		1976-80		Growth Rate 1966-70 to 1976-80	
Country Group	**Number of Countries**	**Percent of Population in 1980**	**Livestock Output Unit**	**Feed**	**Livestock Output Unit**	**Feed**	**Livestock Output Unit**	**Feed**
			(million metric tons)				(percent)	
Level of per capita income, 1980								
Less than $250	19	44	5.65	11.70	7.12	14.94	2.3	2.5
$250–$499	19	16	2.99	3.32	4.08	5.24	3.2	4.7
$500–$1,999	46	25	8.07	18.38	11.70	30.86	3.8	5.3
$2,000 or more	20	15	11.57	23.82	16.45	38.99	3.6	5.1
Total	104	100	28.27	57.21	39.35	90.03	3.4	4.6
Growth rate of per capita income, 1961-80								
Less than 1 percent	27	16	3.97	5.91	5.07	7.45	2.5	2.3
1 percent–2.9 percent	36	48	11.89	18.63	15.23	25.84	2.5	3.3
3 percent–4.9 percent	23	25	7.19	19.23	10.61	32.86	4.0	5.5
5 percent or more	18	11	5.22	13.44	8.45	23.88	4.9	5.9
Total	104	100	28.27	57.21	39.35	90.03	3.4	4.6
Growth rate of livestock output, 1961-80								
Less than 1 percent	13	5	2.14	1.73	2.13	1.88	...	0.8
1 percent–2.9 percent	23	15	7.37	11.71	8.82	16.00	1.8	3.2
3 percent–4.9 percent	44	62	14.51	32.74	20.83	48.89	3.7	4.1
5 percent or more	24	18	4.26	11.02	7.58	23.26	5.9	7.7
Total	104	100	28.27	57.21	39.35	90.03	3.4	4.6

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1981," Rome, 1982; and World Bank, "Gross National Product by Country Data Tape, 1961-80," Washington, D.C., 1981.

Notes: Parts may not add to total due to rounding. Livestock output unit (LOU) = meat + 1/10 milk + eggs.

according to the rates of growth of their livestock output. Between the late 1960s and late 1970s livestock output increased between 3 and 5 percent a year in 44 countries with a combined population share of 62 percent. In another 24 countries with a population share of 18 percent, the rate of growth exceeded 5 percent per year. The former group of countries had more than a 54 percent share of feed use, whereas the latter group accounted for about 26 percent. Between them their share of feed use was a little more than 80 percent. These countries accounted for 72 percent of livestock output and 80 percent of population. Countries where the output of livestock rose more than 5 percent a year recorded a growth of about 8 percent per year in feed use.

This analysis indicates that in the past the share held by high-income countries in total livestock output was high; consequently, their share of feed use also was high. Many of these countries, particularly in East and Southeast Asia, had poor grazing lands and relied more on poultry and pigs for increased domestic meat production. This also contributed to the rapid growth in the use of cereal feeds.

Trends in Food and Feed Use of Cereals

A recent IFPRI study of the utilization of cereals for food and feed shows that between 1966-70 and 1976-80, feed use increased more rapidly than direct consumption as food. For the Third World countries as a whole, livestock feed use rose 4.6 percent, whereas food use increased at an average rate of 3.1 percent per year (Table 9). Meanwhile, population grew 2.5 percent and livestock output 3.4 percent a year. In Latin America, feed use rose almost one-and-a-half times as fast as direct consumption of food. In the three other regions as well, feed use rose faster than food.

Consumption of livestock products rose faster than that of cereal foods, and, as a result, the derived demand for cereals for feed increased more rapidly than direct food demand. This is discussed in more detail in Chapter 6.

Table 9—Rate of growth of use of cereals for food and feed, by region, 1966-70 and 1976-80

Region	Food Use	Feed Use
	(percent/year)	
Asia	3.0	4.2
North Africa/Middle East	3.6	5.0
Sub-Saharan Africa	2.6	3.1
Latin America	3.3	5.0
Total	3.1	4.6

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Imports of Coarse Grains

Some developing countries met their increased demand for feedgrains, largely coarse grains, through imports. For the 104 study countries taken together cereal imports increased from an average of 4.9 million tons during 1966-70 to 16.5 million tons during 1976-80 (Table 10). Although part of these imports must have been for direct food use, FAO estimates that animal feed accounted for more than three-quarters of developing-country imports of coarse grains in 1981.[14] Among the major net importers of coarse grains for feed were the Republic of Korea, Malaysia, Iran, Egypt, Saudi Arabia, Cuba, Mexico, Brazil, and Venezuela, each of which had net imports of more than half a million tons on average during the 1976-80 period. The 104 study countries taken together, which had net exports of coarse grains of about 5.8 million tons in the late 1960s, became net importers of 3.2 million tons in the late 1970s.

Table 10—Exports, imports, and net trade in coarse grains, 1966-70 and 1976-80 averages

Region	1966-70 Average			1976-80 Average		
	Exports	Imports	Net Trade	Exports	Imports	Net Trade
			(million metric tons)			
Asia	1.86	2.08	−0.22	2.76	4.05	−1.29
North Africa/Middle East	0.42	0.80	−0.38	0.34	3.95	−3.61
Sub-Saharan Africa	0.85	0.71	0.14	0.52	1.69	−1.17
Latin America	7.59	1.29	6.29	9.67	6.80	2.87
Total	10.71	4.87	5.83	13.28	16.49	−3.21

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Note: A minus sign indicates net imports.

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[14] Food and Agriculture Organization of the United Nations, *Livestock Development in Developing Countries and Implications for Consumption and Trade of Feeds* (CCP: GR 82/83), 1983.

Meat/Feed Price Ratios

When world food prices are high, as in the early 1970s, the feeding of cereals to livestock is reduced in the developed countries, and the grains released become available for food use. When prices are low, larger proportions of cereals, particularly coarse grains, are diverted to feed use. Although in the short run, "livestock in fact provided a cushion that served to dampen world market shocks by 'stretching' the grains that were diverted from indirect to direct use," the long-term consequences of food-feed competition are more complex.[15] For a systematic study of the relationship between the prices of cereal feed and the demand for it, several other factors, such as prices of different components of feed and of different types of livestock output, feed efficiency, and price regulations if any on feed ingredients and livestock products, would have to be considered. This is beyond the scope of the present study. However, to give a broad picture of the price trends in feed, annual ratios of producer prices of poultry meat/maize and of pigmeat/maize were worked out for the period 1967-80 for selected countries and are presented in Table 11. This ratio indicates the units of maize that could be purchased in exchange for one unit of meat. Where ratios are high or increasing, livestock production becomes more profitable, leading to increased feed use and vice versa.

The actual data given in the tables do not, however, show any uniform and consistent trends among the selected developing countries, except that, as mentioned earlier, when world food prices were high in the years 1973-75, the meat/feed price ratios were mostly low. In Brazil and Kenya, the ratios were generally falling during the 1967-80 period. On the other hand, in Turkey, Egypt, and India the ratios were rising. In other countries, the behavior was mixed.

Manufactured Feed

The increased demand for livestock products in some developing countries was met through livestock, poultry, and dairy enterprises organized on commercial or semicommercial lines, while in others increased production was sought through small-scale rural enterprises, developed on a cooperative or other basis. In either case, these efforts were supported by feeds, either compound or mixed, largely manufactured in the private sector. The available data indicate rapid growth in the output of these industries. According to information collected by FAO from national governments and feed and feed-ingredient associations, the production of compound feeds in developing countries (excluding China) doubled over a period of five years from an average of about 20 million tons during 1974-76 to 40 million tons in 1980. Latin America produced more than half of the 1980 output, 21.6 million tons. Brazil alone produced 11.4 million tons of compound feed in 1980. Available data for selected developing countries for the years 1974-76 (average) and 1980 are given in Appendix 3, Table 27.

Detailed data on the composition of these feeds are not available, but cereals constituted an important ingredient, although the proportion of cereals varied from type to type. This increase in the output of manufactured feed also contributed to the rapid growth in cereal feed use. These trends are likely to continue into the future.

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[15] The linkage of the two markets, grains for direct consumption and those for animal feed, and the policy implications of the food-feed competition are discussed in Pan A. Yotopoulos, "Middle Income Classes and Food Crisis: The 'New' Food-Feed Competition." *Economic Development and Cultural Change* 33 (No. 3, 1985): 463-483.

Table 11—Ratios of prices received by farmers for poultry and pigmeat to maize, selected countries, 1967-80

Ratio/Country	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Poultry meat/maize price ratio														
Argentina	9.50	10.80	8.90	9.50	12.18	7.70	8.14	10.12	19.48	13.03	12.83	11.96	16.29	14.14
Brazil	15.27	15.28	14.02	14.92	15.00	13.31	15.59	12.97	12.41	11.27	12.39	10.27	11.18	9.18
Egypt	11.26	14.59	13.33	13.37	13.32	13.40	12.36	12.95	13.39	15.53	14.89	17.69	18.39	11.64
India	5.97	7.34	6.84	8.13	7.92	6.85	6.70	5.64	6.97	10.24	8.78	9.67	10.45	10.86
Indonesia	34.76	23.66	12.99	13.66	17.91	17.54	20.64	20.55	17.08	13.71	20.98	27.94	19.81	18.70
Kenya	12.67	14.53	16.25	19.87	16.70	14.29	14.99	14.81	11.76	12.22	11.72	15.10	13.38	13.78
Korea, Republic of	16.75	16.68	15.86	17.78	16.84	12.86	12.74	12.67	14.71	17.49	17.76	18.68	15.56	11.29
Mexico	12.45	12.80	13.15	12.89	12.89	13.06	11.53	9.93	8.60	8.29	10.80	9.27	9.35	7.57
Nigeria	17.55	17.39	17.50	17.50	17.47	17.53	17.56	17.50	16.61	15.31	15.31	15.31	11.45	13.45
Philippines	10.24	11.12	10.76	9.44	8.70	8.22	8.65	8.74	8.67	8.75	9.78	10.52	13.40	13.34
Thailand	11.56	18.92	17.61	15.19	20.08	14.30	10.74	9.11	10.46	11.66	12.39	12.83	10.56	11.10
Turkey[a]	13.73	14.46	14.21	14.81	19.73	22.03	18.31	13.10	13.03	16.17	18.18	23.17	43.60	38.86
Pigmeat/maize price ratio														
Argentina	8.11	12.29	10.76	9.45	11.34	10.91	10.10	12.52	12.61	11.72	12.25	13.62	14.79	10.99
Brazil	6.09	6.05	5.60	5.88	6.35	5.54	6.75	5.06	5.23	4.54	5.11	4.45	5.48	4.74
India	4.57	5.80	5.34	6.27	6.31	5.34	4.70	3.81	4.71	6.91	5.93	6.53	7.06	7.33
Indonesia	10.27	4.58	5.45	5.57	5.33	5.06	6.05	6.01	12.89	14.52	21.43	29.41	20.86	19.68
Korea, Republic of	7.33	9.82	8.42	9.96	10.47	7.59	9.16	7.32	9.01	10.88	9.79	13.52	9.78	8.87
Mexico	9.66	9.95	11.81	12.22	12.33	13.44	12.97	12.67	10.19	9.19	10.08	10.30	11.33	9.05
Nigeria	11.84	11.74	11.83	11.76	11.72	11.72	11.78	11.76	11.22	10.31	10.31	10.31	7.70	9.05
Philippines	7.55	7.76	6.89	7.44	7.28	6.42	6.24	6.11	5.66	5.46	8.89	10.56	10.43	10.51
Thailand	9.59	17.28	16.77	11.71	13.49	11.08	8.46	9.05	10.58	10.87	12.83	11.16	10.52	11.60

Source: Food and Agriculture Organization of the United Nations, "Producer Prices Tape, 1985," Rome, 1985.

[a] For Turkey, barley prices were used instead of maize prices.

5

GROWTH IN CEREAL FEED USE IN TAIWAN AND THE REPUBLIC OF KOREA

The use of cereal grains as livestock feed has increased sharply in Taiwan and the Republic of Korea, both of which are newly industrializing economies with rapidly growing per capita incomes and moderately high income levels. Changes in their consumption of food and feed are indicative of potential developments in other developing countries if they also achieve rapid economic growth.

Taiwan

In Taiwan, cereal feed use increased dramatically from 1950-52 to 1980-82.

Period (average)	Feed Use (1,000 metric tons)	Feeding Ratio
1950-52	69	0.6
1960-62	96	0.9
1970-72	1,302	2.8
1980-82	3,521	4.0

This phenomenal growth in feed use was a consequence of the changes in food consumption patterns that followed Taiwan's remarkable economic progress. During this period, per capita income increased an average of 6 to 7 percent a year and the population growth rate declined significantly from about 3.5 percent in the early 1950s to the present 2.0 percent per year.

Period (average)	Index of Per Capita Income (1976 = 100)	Population (millions)
1950-52	n.a.	8.4
1960-62	35	11.7
1970-72	72	14.9
1980-82	135	17.9

n.a. means not available.

In 1982, the population of Taiwan stood at 18.3 million with an average per capita income of U.S. $2,340.

During the second half of the 1930s, when Taiwan was under Japanese colonial rule, the average food consumption was less than 100 kilograms of cereal and 15 kilograms of meat per year. These foods, along with other components of the food basket, such as starchy roots, pulses, fruits and vegetables, milk, and fish, supplied 1,865 calories of energy and 45 grams of protein per day. By the second half of the 1940s, the average per capita cereal consumption had increased by 22 percent, but the intake of meat had declined to nearly half of 1935-39 levels. Steady recovery began in the early 1950s, when the per capita consumption of cereals rose to 140 kilograms and that of meat to 11 kilograms per year. Per capita consumption reached 2,068 calories and protein 47 grams per day. Cereal consumption peaked in the early 1970s at about 165 kilograms a year but then declined to 134 kilograms in 1980-82. The consumption of livestock products continued to increase steadily, reaching 26 kilograms of meat in 1970-72 and 41 kilograms in 1980-82. Per capita consumption of milk and eggs also increased dramatically. Total calorie intake rose to 2,700 calories per day, while intake of proteins increased to 77 grams by 1980-82. The proportion of animal proteins in the total protein intake also increased from 22 percent in 1950-52 to about 42 percent in 1980-82.

Far-reaching changes took place on the supply side also. In the second half of the 1930s, cereal production in Taiwan consisted almost entirely of rice, nearly 50 percent of which was exported, mostly to Japan. By the early 1950s, rice production reached 1.5 million tons, of which about 87,000 tons were exported, but the country imported about 70,000 tons of wheat to augment domestic cereal supplies. From then on, imports of wheat for direct consumption increased regularly, reaching nearly 300,000 tons by the early 1960s and about 670,000 tons by 1980-82. Production of rice also increased to 2 million tons by 1960-62. Thereafter, growth in rice production slowed; rice output hovered between 2.4 and 2.6 million tons in the 1970s. Taiwan, which normally produces only a small amount of coarse grain, increased its output from less than 40,000 tons in 1960-62 to about 125,000 tons in 1980-82. However, coarse grain imports increased from 18,000 tons to 3.6 million tons during the same period, mostly for use as livestock feed. As food consumption habits shifted toward a diet oriented to meat and other livestock products, imports of wheat showed only a small increase between 1970-72 and 1980-82. The country started exporting large quantities of rice in the late 1970s, reaching 430,000 tons in 1979. From a net exporter of cereals in 1950-52, Taiwan became a net importer, with net imports as a percentage of total domestic utilization increasing from 13 percent in 1960-62 to 58 percent in 1980-82. As stated, the bulk of imports in the 1980s were for livestock feed.

The increased demand for meat, milk, and eggs in Taiwan was largely met from domestic production. Meat output increased steadily from less than 100,000 tons in 1950-52 to 728,000 tons in 1980-82. More than 60 percent of this increase was in pigmeat, which rose from 80,000 to 470,000 tons during this period. Impressive increases were recorded in the output of milk and eggs as well. Milk output rose from less than 1,000 tons to about 52,000 tons, while output of eggs increased elevenfold to about 148,000 tons in 1980-82.

In LOUs, the output of livestock products increased from 108,000 tons in 1950-52 to 881,000 tons in 1980-82. Thus the feeding ratio—that is, the use of cereal feed per unit of livestock output—increased from 0.6 to about 4.0 during this period. Selected data on production and trade of cereals and livestock products are given in Table 12. Consumption data are given in Table 13.

Republic of Korea

Rapid increases in the output of livestock products also occurred in the Republic of Korea. Korea had an average per capita income growth rate of 7 percent a year during the last two decades, and the average per capita income was $1,910 in 1982.

Period (average)	Per Capita Income (1980 U.S. $)	Population (millions)
1961-65	523	26.7
1969-71	840	31.3
1979-81	1,567*	38.5

*In current prices.

Between the 1960s and the end of the 1970s, the output of meat increased at a rate exceeding 10 percent a year, rising from a little less than 100,000 tons during 1961-65 to about 516,000 tons during 1979-81. The growth in fresh milk production was even more phenomenal; it rose from about 7,000 tons to 452,000 tons. The output of eggs rose 5.5 times (Table 14).

To sustain this production growth, the quantity of cereals used as livestock feed increased from 229,000 tons in the early 1960s to more than 3 million tons during 1979-81. Of the latter, coarse grains—mostly imported—accounted for about 90 percent. Thus the feeding ratio increased from 1.6 to 3.7 during the period.

Period (average)	Feed Use (1,000 metric tons)	Feeding Ratio
1961-65	229	1.6
1969-71	725	2.4
1979-81	3,052	3.7

On average, the Republic of Korea produced 4.6 million tons of cereals during 1961-65, of which two-thirds was milled rice, about 30 percent was coarse grains, and the balance was wheat (Table 14). By 1969-71, rice production rose to 3.6 million tons, an increase of 16 percent over seven

Table 12—Average production and trade of cereals and livestock products, feed use, per capita income, and population, Taiwan, selected years

Variable	1950-52	1960-62	1970-72	1980-82
		(1,000 metric tons)		
Cereal production				
Rice (husked)	1,492	2,007	2,376	2,419
Wheat	17	44	3	3
Coarse grains	13	39	79	125
Total	1,522	2,089	2,457	2,547
Cereal exports				
Rice	86.9	63.9	38.2	213.6
Wheat	. . .	2.0	1.8	. . .
Coarse grains	. . .	. . .	. . .	. . .
Total[a]	86.9	65.9	40.0	213.6
Cereal imports				
Rice	. . .	46.1	2.4	4.7
Wheat	70.2	293.5	628.5	670.2
Coarse grains	. . .	18.2	1,208.1	3,585.5
Total[a]	70.2	357.8	1,839.0	4,260.4
Total available supply of cereals[b]	1,430.2	2,297.8	4,659.8	7,009.4
Net imports of cereals	−16.7[b]	291.9	1,788.9	4,046.8
Net imports as a share of total supply (percent)	. . .	12.70	38.39	57.73
Output of livestock products				
Meat	94	145	398	728
Milk	1	5	19	52
Eggs	13	19	64	148
Total in livestock output units	108	164	465	881

Source: Council for Agricultural Planning and Development, *Taiwan Food Balance Sheet, 1935-1980* (Taiwan: Republic of China, July, 1981). Data from 1981 onward were obtained from the Council separately.

Notes: Meat includes beef, buffalo, mutton, goat, pig, and poultry meat, all in carcass weight equivalents. Production and consumption were more or less the same, as the net trade in total meat use was almost negligible. Parts may not add to total due to rounding.

[a] Total available supply = production + changes in stock + imports − exports.

[b] This figure represents net exports.

years. Average output of rice reached 4.3 million tons during 1979-81, showing an average growth rate of 2.0 percent per year over the entire period. Coarse grains production rose much faster during the first period, but it declined thereafter. The average production during 1979-81 was even lower than that in 1961-65. The overall production of cereals, which increased at an average rate of 3.1 percent a year in the first period, declined by 1979-81, reducing the overall growth rate to 1.1 percent. This

Table 13—Per capita consumption per year, Taiwan, selected years

Years	Cereals	Meat	Milk	Eggs	Calories	Protein
		(kilograms)			(per day)	(grams/day)
1950-52	140	11.2	0.5	1.6	2,068	47
1960-62	161	12.0	1.3	1.6	2,345	58
1970-72	165	26.3	2.5	4.3	2,653	73
1980-82	134	40.6	5.8	8.2	2,706	77

Source: Council for Agricultural Planning and Development, *Taiwan Food Balance Sheet, 1935-1980* (Taiwan: Republic of China, July, 1981). Data from 1981 onward were obtained from the Council separately.

Table 14—Average production and trade of cereals and livestock products, Republic of Korea, selected years

Variable	1961-65	1969-71	1979-81
		(1,000 metric tons)	
Cereal production			
Rice	3,077.5	3,566.7	4,339.2
Wheat	169.8	213.0	64.0
Coarse grains	1,387.7	1,961.0	1,229.0
Total	4,635.0	5,740.8	5,632.2
Cereal exports			
Rice	17.4	. . .	. . .
Wheat	. . .	2.7	. . .
Coarse grains	0.5	4.8	1.0
Total	17.9	7.6	1.0
Cereal imports			
Rice	20.9	657.9	1,005.4
Wheat	523.5	1,541.3	1,848.0
Coarse grains	190.0	288.9	2,827.0
Total	734.4	2,488.0	5,680.4
Total domestic utilization of cereals[a]	5,268.4	7,621.4	10,933.4
Net imports of cereals	716.5	2,480.5	5,679.4
Net imports as a share of total domestic utilization (percent)	13.6	32.5	51.9
Output of livestock products			
Meat	98	163	516
Milk	7	53	452
Eggs	46	132	256
Total in livestock output units	144	300	817

Sources: Food and Agriculture Organization of the United Nations, (FAO), "Agriculture: Toward 2000 Tape," Rome, 1981; FAO, *Food Balance Sheets, 1979-81 Average* (Rome: FAO, 1982); and FAO, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982; and FAO, "Production Yearbook Tape, 1981." Rome, 1982.

Notes: The ellipses indicate nil or negligible. Parts may not add to total due to rounding.

[a] Total domestic utilization = production + net imports + change in stocks.

was nearly half of the population growth of 2.2 percent per year.

The increased demand for cereals both for domestic consumption as food and the derived demand for feed had to be met through imports. These imports increased eightfold from about 734,000 tons in 1961-65 to 5.7 million tons in 1979-81. About half of the imports during the latter period were for livestock feed and consisted of coarse grains. Thus net imports of cereals as a percentage of total domestic utilization increased from about 14 percent to 52 percent.

The per capita consumption of cereals also followed the expected path (see Table 15). Use of cereals for food rose from 178 kilograms per year in 1961-65 to 207 kilograms in 1969-71, but in the next decade it declined marginally to 205 kilograms. On the other hand, the per capita consumption of livestock products increased fourfold overall. Total consumption also increased during this period—by about 35 percent in calories and 50 percent in protein. The rapid increase in livestock production led to a substantial increase in the derived demand for cereal feed. Putting the food and feed uses of cereals together, total per capita use of cereals increased from 186 kilograms during 1961-65 to 284 kilograms in 1979-81, an increase of more than 50 percent. The share of cereal feed in total grain use also increased from 4 percent to 28 percent during the same period.

Table 15—Per capita consumption per year, Republic of Korea, various years

Years	Cereals	Meat	Milk	Eggs	Calories	Protein
		(kilograms)			(per day)	(grams/day)
1961-65	178	3.6	2.7	1.5	2,147	55
1969-71	207	5.2	4.6	3.8	2,539	67
1979-81	205	14.7	11.7	6.1	2,895	82

Sources: Food and Agriculture Organization of the United Nations, (FAO), "Agriculture: Toward 2000 Tape," Rome, 1981; FAO, *Food Balance Sheets, 1979-81 Average* (Rome: FAO, 1982); and FAO, "Agricultural Supply/Utilization Accounts Tape 1981," Rome, 1982.

Conclusions

To summarize the conditions favorable to a rapid rise in livestock output and the derived demand for cereal feed based on the experiences of Taiwan and Korea, first, both the economies had rapid growth in per capita incomes and their current income levels were in the upper middle range. Second, the per capita consumption of livestock products until the early 1960s was low and the income elasticity of demand for these products was high, which led to rapid growth in their aggregate demand. Third, both had potential for the development of livestock products, particularly pork and poultry meat, milk, and eggs. They imported new production technology from the developed countries and invested in capital-intensive commercial or semicommercial livestock enterprises. Fourth, neither Taiwan nor the Republic of Korea had large permanent pastures or grazing areas, and hence they had to depend on concentrate feeds. In both countries land is a constraint: domestic shortages in feedgrains were met through large-scale imports, and the feeding ratio increased rapidly. The infrastructure needed for processing, refrigerated storage, transport, and marketing of these perishable products was available in both. The two economies had rapid trade growth; thus foreign exchange was not a constraint. They preferred to import feeds and meet the increased demand through domestic production rather than importing livestock products from outside.

It is true that all these conditions may not be replicated in other developing countries. For example, in some of the medium- and high-income countries of Latin America, where current levels of per capita livestock consumption are relatively high, the income elasticity of demand for these products is lower, though still higher than that for cereals. Consequently, future growth in per capita demand for livestock products may not be as fast. Moreover, in some of the developing countries in Latin America and Sub-Saharan Africa where land is not scarce, the higher demand for feedgrains may be met from increased domestic production. What the Taiwanese and Korean experiences indicate is that with rapid increases in per capita income and high income elasticity of demand for livestock products, the derived demand for feedgrains grows rapidly, and the feeding ratio also rises rapidly.

6

DYNAMICS OF DEMAND FOR FOOD AND FEEDGRAINS IN SELECTED DEVELOPING COUNTRIES

Data presented in Chapter 4 show that the use of cereals for feed rose faster than food use between the late 1960s and late 1970s in Third World countries. Projections of demand for cereals and other food staples, based on income elasticities and the continuation of past income trends, suggest that this trend is likely to continue. The case studies of Taiwan and the Republic of Korea indicate that the derived demand for feed could grow even faster than past trends suggest. In general, as per capita incomes rise in developing countries, consumption of livestock products rises much faster because the income elasticity of demand for these products is much higher than that for direct consumption of cereals. This could lead to a rapid rise in the derived demand for feed, particularly in countries where the increased domestic demand for livestock products is met through accelerated domestic production. In addition, the feeding ratio, that is, the average quantity of cereals used to produce one unit of livestock products, increases because of changes in the composition and structure of livestock products and feeds.

The proportion of poultry and pigmeat in the total output of meat has increased significantly in recent years. In developing countries, poultry, pork, and dairy enterprises are increasingly organized along commercial or semicommercial lines. They use more compound and mixed feeds, which have cereals as a major component. These enterprises are no longer backyard operations that rely on farmyard and household wastes and by-products. To meet the increased demand for compound and mixed feeds, the feed manufacturing industry is developing rapidly, leading to larger demand for feedgrains and consequently to higher average feeding ratios in livestock production.

Further, the income elasticity coefficient for livestock products, particularly poultry and eggs, remains relatively stable at one or a little above one in many developing countries (see Appendix 3, Table 28). At low incomes, the per capita consumption of livestock products is small, and hence the derived demand for cereals for feed is small compared with that for direct food consumption. As incomes rise, the elasticity coefficient for cereals for direct food consumption declines; the much higher income elasticity of derived demand for cereals arising from livestock products may also decline but less rapidly. Although feedgrains' share of the total domestic utilization of cereals is still small in many developing countries, it seems likely that it will grow rapidly, leading to a decline in the share of cereals used for food. Thus the behavior of the average income elasticity of demand for grains requires careful study. When the weighted average elasticity is high, especially in Third World countries with rapid per capita income growth and moderately high population growth, aggregate demand for grains would increase rapidly. Where this demand is not matched by increased domestic production, cereal imports could increase substantially.[16] Here the conditions under which the combined demand for grains would increase rapidly are examined analytically and tested with empirical data.

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[16] Mellor, John W. "Third World Development: Food, Employment and Growth Interactions," *American Journal of Agricultural Economics* 64 (May 1982): 304-311; and John W. Mellor and Bruce F. Johnston, "The World Food Equation: Interrelations Among Development, Employment, and Food Consumption," *Journal of Economic Literature* 22 (June 1984): 531-574.

Total Demand for Grains

The total demand for grain in year t, D_t, is the product of population, P_t, and per capita consumption, C_t:

$$D_t = P_tC_t. \qquad (1)$$

Further,

$$P_t = P_0(1 + r_p)^t, \qquad (2)$$

$$C_t = C_0(1 + r_c)^t, \text{ and} \qquad (3)$$

$$r_c = (dc/dt)/c = [(dc/dy)(y/c)]$$
$$[(dy/dt)(1/y)] = \eta_g r_y, \qquad (4)$$

where

P_0 = the popuiation in base period 0,

C_0 = the per capita consumption in base period 0,

r_p = the rate of growth of population,

r_c = the rate of growth of per capita consumption,

c = per capita consumption,

y = per capita income,

η_g = the income elasticity of demand for grain, and

r_y = the rate of growth of per capita income.

Equations (2), (3), and (4) can be substituted into equation (1) to give[17]

$$D_t = P_0C_0[(1 + r_{pt})^t(1 + \eta_{gt}r_{yt})^t] \qquad (5)$$

where r_{pt} and r_{yt} are the rates of growth in population and per capita income, and η_{gt} is the income elasticity in period t.

The income elasticity for grain, η_g, is a weighted average of the elasticities of food (η_f) and feed (η_η) with β and $(1 - \beta)$ as weights, where β represents the share of food and $(1 - \beta)$ is the share of feed in total grain use,[18] or

$$\eta_g = \beta\eta_f + (1 - \beta)\eta_\eta. \qquad (6)$$

The demand for feedgrains for, say, meat production is equal to the demand for meat (g_3) multiplied by the feeding ratio (α) or the amount of feed required to produce one unit of meat. Then the income elasticity of demand for feed equals the sum of income elasticities of meat (η_m) and the relative change in the feeding ratio to the percentage change in per capita income (η_α):[19]

$$\eta_\eta = \eta_m + \eta_\alpha. \qquad (7)$$

If equations (6) and (7) are combined, the income elasticity of demand for total grains equals

$$\eta_g = \beta\eta_f + (1 - \beta)(\eta_m + \eta_\alpha). \qquad (8)$$

Example 1

This example and the ones that follow merely illustrate the behavior of these variables and do not necessarily represent the actual conditions in any particular country. Scenario 1 in Table 16 shows the behavior of η_g as η_f declines for different values of β and for the constant value of $\eta_m = 1.0$, assuming that $\eta_\alpha = 0$ and hence $\eta_\eta = 1$.[20]

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[17] If η_g and r_y are not constant over time, every time η_g or r_y or both change, r_c will also change. Thus the rate of growth in per capita consumption over time period t is given by $r_{ct} = \eta_{gt} \times r_{yt}$, where η_{gt} and r_{yt} also relate to time period t.

[18] The total demand for grain, g, is the sum of demand for food (g_1) and feed use (g_2). Thus $g = g_1 + g_2$; $(dg/g) = (g_1/g)dg_1 + (g_2/g)dg_2 = \beta dg_1 + (1 - \beta)dg_2$. Dividing both sides by (dy/y), $\eta_g = \beta \times \eta_f + (1 - \beta) \times \eta_\eta$. Total domestic utilization of grain also includes its use for seed, nonfood industrial uses, and allowance for wastage. These are not considered here for the sake of simplicity.

[19] Thus, $g_2 = \alpha g_3$, $dg_2/g_2 = dg_3/g_3 + d\alpha/\alpha$. Dividing throughout by (dy/y), $\eta_\eta = \eta_m + \eta_\alpha$.
Here meat is taken to represent the livestock output: milk and eggs are not considered.

The combined elasticity first decreases and then increases. The combined elasticity increases rapidly when the ratio of feed to food plus feed increases (or the value of β declines).

Example 2

The values of η_f and β are assumed to remain the same in two other cases, scenarios 2 and 3. In scenario 2, η_α and η_m are taken to equal 1 and hence $\eta_\eta = 2$ (constant). This implies that, associated with a 1 percent increase in per capita income, the feeding ratio also increases by 1 percent. In scenario 3, $\eta_\alpha = 0$ and η_η decreases. The computed values of η_g are given in Table 16.

In scenario 2, where $\eta_\eta = 2$ (constant), η_g increases continuously. In the third scenario where η_η and η_m decrease, η_g first decreases, then increases, and finally decreases. Declining elasticities of meat occur when meat consumption is already high, as in parts of Latin America.

The two examples given above show that apart from the values of η_f, η_m, and η_η, the behavior of β also influences the changes in η_g.

The magnitude of the change in β depends on the initial values of β, η_f, η_η and the rate of change in per capita income (dy/y), as equation (10) shows:

$$\beta = g_1/g; d\beta = (dg_1/g) - (g_1 dg/g^2). \qquad (9)$$

Thus

$$d\beta/\beta = (dg_1/g_1) - (dg/g)$$
$$= (\eta_f - \eta_g)(dy/y).^{21} \qquad (10)$$

Example 3

For values of $\beta = 0.95$, $\eta_f = 0.22$, and $\eta_\eta = 1.00$, the decrease in β associated with a 4 percent increase in per capita income will be 0.0015 per year. The same figure works out to be about 0.0095 per year where $\beta = 0.50$, $\eta_f = 0.05$, and $\eta_\eta = 1.00$.

The changes in η_g with changes in per capita income are given by the inequality

$$d\eta_g/dy \gtreqless 0. \qquad (11)$$

Table 16—Three scenarios for income elasticities of demand

Constant		Scenario 1		Scenario 2		Scenario 3	
η_f	β	$\eta_\eta = 1$	η_g	η'_η	η'_g	η''_η	η''_g
0.22	0.95	1.00	0.259	2.00	0.309	1.00	0.259
0.15	0.90	1.00	0.235	2.00	0.335	0.80	0.215
0.10	0.75	1.00	0.325	2.00	0.575	0.64	0.235
0.05	0.50	1.00	0.525	2.00	1.025	0.40	0.225

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[20] The assumption that $\eta_\alpha = 0$ implies that the average feeding ratio remains unchanged throughout the projection period.

[21] Dividing both sides of (9) by (dy/y), one obtains

$$(d\beta/\beta) \div (dy/y) = [(dg_1/g_1) \div (dy/y)] - [(dg/g) \div (dy/y)] = \eta_f - \eta_g.$$

Differentiating equation (6) with respect to y,

$$\begin{aligned} d\eta_g/dy &= (d\beta/dy)\eta_f + \beta(d\eta_f/dy) \\ &\quad + [d(1-\beta)/dy]\eta_n \\ &\quad + (1-\beta)(d\eta_n/dy) \\ &= (d\beta/dy)(\eta_f - \eta_n) \\ &\quad + \beta(d\eta_f/dy) \\ &\quad + (1-\beta)(d\eta_n/dy). \qquad (12) \end{aligned}$$

From empirical evidence, in the developing countries generally $\eta_n > \eta_f$; and hence $\eta_f - \eta_n$ is negative. As incomes increase, β usually decreases, and hence $d\beta$ is negative.

Thus the first term is positive. η_f is constant or decreases. The second term is zero or negative. Further, if η_n is constant, $d\eta_n$ is zero, and hence the third term is zero.

Then, η_g decreases or increases if

$$|\beta(d\eta_f/dy)| \gtrless |(d\beta/dy)(\eta_f - \eta_n)|. \qquad (13)$$

When η_n decreases, then η_g decreases or increases if

$$\begin{aligned} &|\beta(d\eta_f/dy)| + |(1-\beta)(d\eta_n/dy)| \\ &\qquad \gtrless |(d\beta/dy)(\eta_f - \eta_n)|. \qquad (14) \end{aligned}$$

Thus the behavioir of η_g is determined by the inequalities (13) and (14).

Example 4

To determine the precise effects of growth components on overall growth is complex and varies from country to country. To illustrate, the grain demand for feed use was projected for 12 selected countries assuming that the income elasticity of meat is a proxy for feed elasticity. Data on the projected growth rates of utilization of cereals for food and feed based on this assumption are given in Table 17.

Table 17 shows that if past income trends continue, the overall demand for grains in Kenya is projected to grow between 1980 and 2000 at 5.1 percent a year and in Nigeria at 4.7 percent a year. In Kenya and Nigeria, population growth is the major contributing factor. In Indonesia, demand is expected to grow less than 2 percent a year. In all the other countries, demand would grow between 2.0 and 4.0 percent a year. In Turkey, the combined food and feed elasticity is high at about 0.5.

Growth in Foodgrain Use. The income elasticity of demand for foodgrains, η_f, is low and is declining in a number of developing countries. The average implied income elasticity during the 1980-2000 period is negative in 5 out of the 12 countries: Indonesia, Thailand, Malaysia, Turkey, and Mexico.[22] In India and the Philippines η_f lies between 0.20 and 0.24, and in the Republic of Korea it is very small. In the remaining four countries, η_f is positive and less than 0.20 (also see Appendix 3, Table 28). Taking into account the effects of population and income growth, the projected growth in food use of cereals exceeds 4 percent per year in Kenya and Nigeria, and it lies between 2 and 3 percent in India, Egypt, the Philippines, and Brazil. In the remaining six countries growth in the demand for cereals for food use is projected at less than 2 percent per year. Even in the five countries where η_f is negative, food demand would still increase because of population growth. And the combined elasticity for food and feed is positive in these countries.

Growth in Feed Use. The income elasticity of demand for feed use with that for meat as a proxy is more than unity in 3 out of the 12 countries.[23] In Indonesia and Nigeria, the projected feed growth exceeds 8 percent per year. In India, however, al-

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[22] Subsequent evidence shows that the income elasticity for cereals is found to be positive in Indonesia and higher than that based on FAO data.

[23] The income elasticity coefficients given in Appendix 3, Table 28 represent the values by type of meat, whereas those in Table 17 relate to implied elasticities derived from the total projected demand for meat.

Table 17—Projected growth in food and feed use of cereals, 1980-2000 and average income elasticity of demand for food and feed, selected countries

Selected Country	Per Capita Income[a] 1980	Population Growth[b] 1980-2000	Per Capita GNP Growth[c] 1980-2000	Feed Growth 1980-2000	Food Growth 1980-2000	Feed and Food Growth 1980-2000	Feed/Feed and Food		Average Feed Elasticity[f] 1980-2000	Average Food Elasticity[g] 1980-2000	Average Combined Elasticity 1980-2000
							1980[d]	2000[e]			
	(U.S. $)		(percent)								
India	223	1.68	1.51	3.42	2.05	2.20	0.10	0.13	1.13	0.24	0.34
Kenya	393	4.25	2.68	6.74	4.65	5.06	0.17	0.23	0.89	0.14	0.29
Indonesia	441	1.53	5.14	8.16	0.66	1.92	0.09	0.29	1.27	−0.17	0.07
Egypt	522	2.32	3.87	5.84	2.41	3.52	0.26	0.40	0.89	0.02	0.30
Thailand	688	1.78	4.35	3.61	1.50	2.06	0.23	0.31	0.41	−0.06	0.06
Philippines	696	2.21	3.38	4.66	2.93	3.32	0.20	0.26	0.71	0.21	0.32
Nigeria	925	3.55	4.55	8.31	4.32	4.72	0.07	0.14	1.01	0.16	0.25
Turkey	1,524	2.18	3.52	5.63	1.00	3.90	0.53	0.73	0.96	−0.33	0.48
Korea, Republic of	1,696	1.31	6.00	4.15	1.31	2.31	0.29	0.42	0.47	0.00	0.16
Malaysia	1,560	2.00	4.61	5.01	1.61	3.03	0.34	0.50	0.64	−0.08	0.22
Brazil	2,061	1.98	6.00	4.61	2.48	3.80	0.57	0.67	0.43	0.08	0.30
Mexico	2,623	2.29	3.60	4.41	1.92	3.25	0.48	0.60	0.58	−0.10	0.26

Sources: Calculated from computer printouts used in Leonardo A. Paulino, *Food in the Third World: Past Trends and Projections to 2000,* Research Report 52 (Washington, D.C.: International Food Policy Research Institute, 1986). GNP data are from World Bank, "Gross National Product by Country Data Tape, 1961-80," Washington, D.C., 1981; and population data are from United Nations, Department of International Economic and Social Affairs, "World Population Prospects as Assessed in 1982," New York, 1983 (computer printout).

[a] Per capita income is based on the 1961-80 trend of GNP in real terms (1979-81 = 100).

[b] Population growth is based on United Nations medium-term population projections, as assessed in 1982.

[c] Per capita GNP is based on 1966-80 trend growth in per capita income. An upper limit of 6 percent was imposed on per capita income growth in projecting it for 1980-2000.

[d] 1980 data relate to trend values.

[e] This is based on projected values of food and feed in 2000. Other uses of cereals, namely seed and waste, are not considered.

[f] The average elasticity of demand for feed is the same as the average elasticity of demand for meat, worked out on the basis of the implied growth rate in projected per capita meat consumption between 1980 and 2000.

[g] The average elasticity of demand for food is based on the implied growth rate in projected per capita cereal consumption between 1980 and 2000.

though η_η is high, the rate of growth in per capita income is low; hence feed growth is about 3.4 percent. In Turkey and Kenya, where η_η is a little less than unity, the projected rates work out to 5.6 and 6.7 percent respectively. In the high-income countries of Brazil and Mexico, η_η is less than 0.6. In spite of Brazil's high income growth and Mexico's high population growth, feed projections show 4.6 and 4.4 percent growth rates respectively. Because of low population growth in the Republic of Korea, feed growth works out to 4.2 percent, despite the high income growth and 0.5 feed elasticity.

Behavior of β Ratios

Appendix 3, Table 29 gives the ratios of the amount of grains for food use to the combined amount for food and feed use in the 12 selected countries, calculated on the basis of the elasticities referred to above. These indicators confirm the earlier observation that in Turkey, Brazil, and Mexico, where the βs were relatively low in 1980, they will decline much faster by 2000, and that in countries where the initial βs are high, the decline is much slower.

Conclusions

This analysis shows that projecting the behavior of the overall demand for grains is quite complex and that the conclusions are sensitive to the assumptions made with regard to the various growth elements. Assuming that meat elasticity is a proxy for feed elasticity implies that the feeding ratio is constant, which is not the case in some Third World countries. Feeding ratios do change rapidly, as in Taiwan and the Republic of Korea, for example. For this reason, the resulting projections probably underestimate the potential growth rates of demand for feedgrains.

7

PROJECTIONS OF CEREAL FEED USE IN DEVELOPING COUNTRIES

Any assessment of the total future demand for cereals for livestock feed should ideally take into consideration the desirable composition of feed in terms of cereals, noncereal feeds, fodders, forages, and crop byproducts. The projected livestock output should also be considered by type, and the feed required to produce it in terms of metabolic energy, protein, and total digestible nutrients based on average feeding schedules. In addition, prices of alternative feeds, scope for improving the efficiency of feed use, and the relationship between input and output prices have to be kept in view.

One approach for estimating feed requirements is to use a regression framework that defines cereal feed use as a function of a number of variables and to determine the relevant coefficients quantitatively based on cross-section or time-series data. The variables might include per capita income; prices; size, composition, and output of the livestock sector; and availability of pastures. However, the poor quality of the data on feed use and some of the other relevant variables in a majority of the developing countries precluded the adoption of this approach. Alternative rough and ready methods, based largely on projected livestock outputs, feeding ratios, or extrapolation of past trends, where appropriate, were adopted instead.

In IFPRI's study of livestock products, the output of meat, milk, and eggs were each projected to 1990 and 2000, based on the continuation of past trends in the output for each country during 1961-77.[24] These projected outputs were then converted into LOUs, as explained in Chapter 3, and aggregated for each subregion. These subregional aggregates multiplied by the corresponding feeding ratios give the requirements of cereal feed in 1990 and 2000. The projected feeding ratios for the years 1990 and 2000 were obtained as extrapolations of the linear trends fitted to the annual data on feeding ratios, which in turn were calculated by dividing the actual feed use (as reported in FAO's "Agricultural Supply/Utilization Accounts") in each year by the corresponding livestock output units for the period 1966-80. This is the first method.

In developing countries in the past, aggregate use of cereal feeds expanded faster than output of livestock products in 10 out of 12 subregions. The second method is based on the assumption that this difference in growth rates will continue, provided observed changes in the composition and structure of meat and milk output and current production techniques continue. To reflect these changes, the projected growth rate implied by the livestock output projections for 1980-2000 was first calculated for each subregion. Next, the difference between the 1966-80 trend growth rate of cereal feed use and that of livestock output (expressed in LOUs) in the subregion were computed. The difference was added to the 1980-2000 growth rate of livestock output. The adjusted growth rate for cereal feed thus obtained was then applied to 1980 trend estimates of cereal feed use in each subregion to obtain the projected feed use in 1990 and 2000.

Another approach, which involved trend projection of time-series data on cereal feed use for each country during the period 1966-80, was also tried. In the methodology for trend projections adopted by IFPRI, output projections are based on an extrapolation of past trends, assuming unchanged relative prices. This method was adopted both for staple food crops and livestock products. Because the requirements of cereal feeds represent the derived demand for their conversion into livestock products, a similar approach was adopted for projecting feed use. A close examination of the fitted exponential trend equations showed deficiencies in several countries. Either the R^2 was too low or the coefficients were not significant, particularly in countries that used only small quantities of feed. In some countries especially in Sub-Saharan Africa, growth rates were extremely high mainly because of data problems; extrapolation of these trends to 1990 and 2000 would have led to unrealistically high estimates unless upper limits to future growth were arbitrarily fixed. In order to surmount these difficulties, two modifications were adopted. First, the data were grouped by subregions, and trend growth rates were calculated based on the annual aggregate feed use in each subregion for the period 1966-80.[25] These growth rates were extrapolated to give the projected feed use in 1990 and 2000, under the third method.

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[24] Sarma and Yeung, *Livestock Products in the Third World*.

It was further noted that in 29 out of 104 countries cereal feed use exceeded 500,000 tons in 1980, and aggregate feed use in these countries formed 90 percent of the Third World total (Appendix 3, Table 30). In the fourth method, cereal feed use in each of these 29 countries was individually projected. The remaining 75 countries were grouped by level of per capita income into four classes: less than \$250, between \$250 and \$499, between \$500 and \$1,999, and \$2,000 and more. The cereal feed use in each group was projected separately. The projected values were added to give the aggregate projected feed use for the 104 countries.

In both the third and fourth methods, the period 1966-80 is used as a data base for growth rate projections. Questions have been raised on whether this is an appropriate base period. It has been argued that per capita incomes in developing countries rose very rapidly during most of this period, and the consumption of livestock products also increased rapidly. If economic growth slows, the demand for these products may not grow as quickly.[26] It is true that as the result of improvements in agricultural technologies and institutions, increasing adoption of outward-looking industrial policies, and favorable external conditions, the 1966-73 period witnessed high economic growth in some developing countries. Subsequently, however, the oil shocks of 1974 and 1979-80, the ensuing recession and protectionism in the countries belonging to the Organization for Economic Cooperation and Development (OECD), and mounting debt repayment problems slowed economic growth in the developing countries. There are, however, indications of economic recovery. The average economic growth during 1966-80 seemed to be one that developing countries could achieve through the structural adjustments that are now being undertaken in several developing countries. These promise improvements in the efficiency with which resources are allocated and used, thus enhancing the prospects for better economic performance in the future.

Moreover, growth in the use of cereal feed is related to growth in the output of livestock products, particularly poultry, pigmeat, eggs, and milk. As long as trends in these products continue, the derived demand for feed will also continue to grow rapidly. Analysis of more recent trends in the output of livestock products in developing countries (excluding China) during the period 1973-75 to 1982-84 shows further acceleration in the growth rate of meat, milk, and egg output.[27]

The fifth method is that adopted in the IFPRI research report by Leonardo Paulino,

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[25] This is based on the assumption that statistical errors tend to be compensated for in aggregates.

[26] These questions are discussed more fully in Sarma and Yeung, *Livestock Products in the Third World.*

[27] The average output of meat increased from 22.1 million tons in 1974-76 to 29.6 million tons in 1982-84—an average annual rate of 3.7 percent. For milk, the average increase was 2.8 percent a year from 87.1 million tons to 108.4 million tons over the same period. Production of eggs also accelerated, growing 6.1 percent a year and rising from 4.3 million tons to 7.0 million tons.

Food in the Third World. In estimating the projected animal feed use in 2000, the income elasticity of demand for meat was used as a proxy for that of feed. However, because the report gave the projected feed use of major food crops as a group, the cereal component was calculated for 1990 and 2000, using the same method. Thus trend estimates of per capita use of cereal feed in 1980 were obtained, and these were projected to 1990 and 2000, using trend per capita income growth and income elasticity of demand. This approach to projecting the derived demand for animal feed essentially assumes that feed use in a country would grow as fast as the demand for meat. Projected feed use would be overestimated in countries where meat consumption growth is faster than growth of production and underestimated in countries where production growth rates are faster. Further, to the extent that income growth during the early 1980s is lower than the 1966-80 trend and is not compensated for by faster economic growth during the remainder of the decade, consumption of livestock products may not grow as fast as projected; thus the calculated demand for feed based on the elasticity of meat may also be delayed in reaching projected levels.

It was seen in Chapter 6 that estimating feed requirements using the income elasticity of meat as a proxy for feed elasticity implies that the feeding ratio would be constant during the projection period. If the feeding ratio increases, as it did in Taiwan and the Republic of Korea, the projected estimates using this method would be too low. This method also assumes that income elasticity of meat represents the combined elasticity of meat, milk, and eggs. Thus, although the fifth method has the advantage of easy conceptualization and computation, the projections under this method have their limitations as well. Details of these five methods are given in Appendix 1.

Table 18 and Figure 4 show trend estimates for cereal feed use in 1980, calculated as the aggregate of subregional trend values, and the projected cereal feed use in 1990 and 2000, based on the five alternative methods.

If historical trends in the output of livestock products continue, developing countries are projected to produce 51 million tons of meat, 178 million tons of milk, and 15 million tons of eggs, a little more than 83 million tons in LOUs by the end of the century. Using the first method, the average projected feeding ratio for 2000 works out to a little more than 2.9. Thus the estimated level of cereal feed use for the Third World would amount to about 245 million tons, which is roughly two-and-a-half times the level reached in 1980. This implies an annual growth rate of about 4.7 percent. The estimate for 1990 indicates a 50 percent increase over 1980. Nearly 46 percent of estimated cereal feed use in 2000 would be in Latin America, 28 percent in Asia, 23 percent in North Africa/Middle East, and the balance in Sub-Saharan Africa.

Among the subregions, rapid growth in feed use exceeding 6 percent per year is projected for North Africa and for Central America (which includes Mexico and the Caribbean) if the existing trends in livestock output are maintained (see Appendix 3, Table 31). Lower South America at 1.5 percent and South Asia at 2.0 percent would have the slowest growth. In both these subregions the growth in livestock output between 1980 and 2000 is projected to be relatively low, and the rate of growth in feed use during 1966-80 was less than the corresponding growth in livestock output.

If, instead of dividing milk by 10 and adding meat and eggs to arrive at the aggregate livestock production in LOUs, the alternative procedure of converting all livestock products into Physiological Fuel Values discussed in Chapter 3 is adopted, and the same methodology is adopted for projecting feed requirements, the projected levels of feed use come to 153 million tons in 1990 and 251 million tons in 2000. The latter represents a 2.4 percent increase over the estimate under the former procedure for 2000.

Using the second method, the projected levels of livestock output represent an annual compound growth rate of 3.7 percent between 1980 and 2000. Adding to this the difference between LOUs and feed growth

Table 18—Cereal feed use projections under alternative assumptions, by region, 1990 and 2000

Method	Year	Rate of Growth[a]	Total 104 Countries	Asia	North Africa/ Middle East	Sub-Saharan Africa	Latin America
		(percent)			(million metric tons)		
Trend base	1980	n.a.	98.1	30.7	21.7	4.0	41.7
Method 1	1990	4.4	150.6	44.3	33.8	5.8	66.7
	2000	4.7	244.9	68.4	56.3	8.5	111.6
Method 2	1990	5.0	160.2	46.4	36.9	5.9	71.0
	2000	5.2	269.5	72.1	63.7	8.6	125.2
Method 3	1990	5.0	159.2	47.2	35.3	5.5	71.1
	2000	5.1	265.5	73.9	58.2	7.5	125.9
Method 4	1990	5.2	162.5	n.a.	n.a.	n.a.	n.a.
	2000	5.5	285.6	n.a.	n.a.	n.a.	n.a.
Method 5	1990	4.8	156.9	47.8	39.6	6.7	62.9
	2000	4.7	244.6	72.6	69.9	11.7	90.4

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1981," Rome, 1982; Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982; J. S. Sarma and Patrick Yeung, *Livestock Products in the Third World: Past Trends and Projections to 1990 and 2000*, Research Report 49 (Washington, D.C.: International Food Policy Research Institute, 1985); World Bank, "Gross National Product by Country Data Tape, 1961-80," Washington, D.C., 1981; and computer printouts used in Leonardo A. Paulino, *Food in the Third World: Past Trends and Projections to 2000*, Research Report 52 (Washington, D.C.: International Food Policy Research Institute, 1986).

Notes: Parts may not add to total due to rounding. n.a. indicates not applicable. Method 1 is based on projected values of the feeding ratio in 1990 and 2000 applied to the projected value of livestock output units (LOUs) in 1990 and 2000. Method 2 is an extrapolation of 1980 trend value of feed use, using the growth rate of LOUs in 1980-1990/2000 adjusted for the difference between the feed use growth and LOU growth during 1966-80. Method 3 is an extrapolation of the 1980 trend values of feed use in each subregion, based on 1966-80 trend growth. Method 4 is an extrapolation of 1980 trend values of feed use in 29 individual countries and the rest of the countries grouped by per capita income level. Method 5 uses the income elasticity of demand for meat as a proxy for the income elasticity of derived demand for feed.

[a] This is the rate of growth between 1980 and 1990/2000.

rates, the use of cereal feed is estimated to increase at about 5.2 percent a year, reaching about 270 million tons in 2000 compared with 245 million tons under the first method. The projected level in 1990 is about 160 million tons, which is about 10 million tons higher than in the first method. The regional distribution of feed use is similar under the first and second methods.

Subregional trend projections proposed under the third method indicate that the estimated feed use in 1990 and 2000 would be 160 and 265 million tons respectively. The projections are close to those under the second method. At 5.1 percent a year, the projected growth rate between 1980 and 2000 is slightly less.

The trend projections of feed use for the 29 individual countries and the grouped aggregates for the other countries envisaged under the fourth method would put the estimated feed use in 2000 at 286 million tons, implying an average growth rate of 5.5 percent a year. This is the highest among the five estimates. The 29 countries would have a total feed use of 261 million tons in 2000. The rest of the countries would share 25 million tons by the end of the century, as shown in Table 19.

Under method 5, which is based on the IFPRI food gap study,[28] the projected cereal feed demand is 157 million tons in 1990 and 245 million tons in 2000, implying growth rates of 4.8 and 4.7 percent respec-

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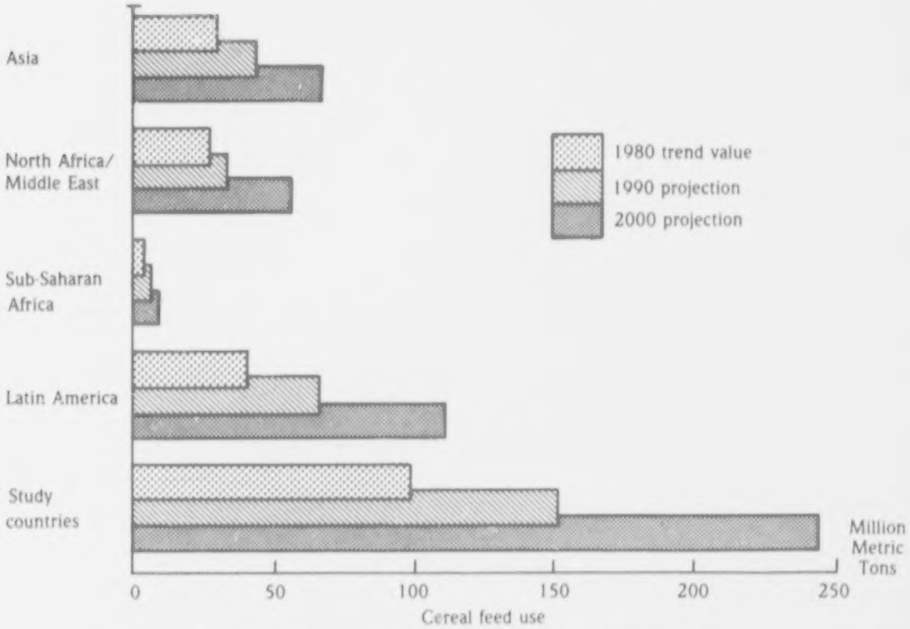
[28] Paulino, *Food in the Third World*.

Figure 4—Trend cereal feed use in 1980 and projections to 1990 and 2000, by region, based on projected livestock output



Sources: Calculated from Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1981," Rome, 1982; and Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Table 19—Projected cereal feed use in 75 selected countries, by per capita income groups, 1990 and 2000

Per Capita Income Group	Rate of Growth, 1966-80	Projected Cereal Feed Use		
		1980	1990	2000
	(percent/year)	(million metric tons)		
Less than $250	0.3	1.50	1.55	1.59
$250–$499	3.8	1.98	2.88	4.20
$500–$1,999	5.1	4.26	7.01	11.52
$2,000 or or more	6.3	2.26	4.16	7.66
Total 75 countries	4.7	9.99	15.59	24.97

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982; and World Bank, "Gross National Product by Country Data Tape, 1961-80," Washington, D.C., 1981.

Note: Parts may not add to total due to rounding.

tively over the trend value in 1980. Although the projected Third World demand for feed in 2000 under methods 1 and 5 is very nearly the same, the regional distribution of this demand is different. Under method 5, Latin America's share of the total comes to about 37 percent, nearly 9 percent lower than under the first method. North Africa/Middle East accounts for less than 29 percent, which is about 6 percent higher than under the first method.

Among the 29 countries for which feed use is individually extrapolated under method 4, the projected levels of feed use are quite high in Mexico, the Republic of Korea, and Venezuela compared to those under the fifth method, whereas in Turkey the projected level is much lower. Moreover, in four countries, namely Colombia, the Republic of Korea, Saudi Arabia, and Venezuela, where

1966-80 trend growth of cereal feed exceeded 10 percent a year, a constraint of 10 percent was imposed in extrapolating for 1990 and 2000. The aggregate projected demand depends upon the level at which the constraint is placed.

Thus, these five methods of projection give a range of feed demand varying from 151 million to 163 million tons in 1990 and from 245 million to 286 million tons in 2000. The results under methods 1 and 5 are close in 2000. These imply an average growth rate of 4.7 to 5.5 percent a year between 1980 and 2000. The corresponding feeding ratio would range from 2.9 to 3.4, as compared to 2.4 in 1980.

Comparison with FAO Results

The FAO global study *Agriculture: Toward 2000* also covered livestock products, but apart from providing a broad indication of projected growth in cereal feed use for 90 developing countries, it does not go into details on feed projections.[29] The estimates are given under two scenarios: an optimistic scenario A and a medium growth scenario B. According to these indications cereal feed is projected to grow at annual rates of 5.7 and 4.8 percent between 1980 and 2000, under scenarios A and B respectively. These compare with IFPRI projections of 5.5 and 4.7 percent annual growth under methods 4 and 1.

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[29] Food and Agriculture Organization of the United Nations, *Agriculture: Toward 2000* (Rome: FAO, 1981).

8

CONCLUSIONS AND POLICY IMPLICATIONS

IFPRI's projections of the Third World food gap based on the continuation of 1961-80 trends in production and 1966-80 trends in per capita income show that the developing countries (excluding China) could have an overall net food deficit of 76 million tons of basic food staples, including cereals and other food crops, at the end of the century.[30] They also indicate that although Asia could have a net surplus, the other three regions are likely to have net deficits—sizable deficits in North Africa/Middle East and Sub-Saharan Africa. These estimates are based on the projected total domestic utilization of 874 million tons of cereals and 172 million tons of other staple food crops. Of these, the projected demand for livestock feed is estimated at about 245 million tons of cereals and 23 million tons of other staple food crops.[31] The analysis in the preceding chapter has shown that if past trends in livestock production and use of cereals for feed continue, the derived demand for cereals for feed could rise to about 285 million tons under method 4, an increase of 40 million tons.

Implications of Accelerated Livestock Production

There are, however, some factors that may cause cereal feed use at the end of the century to be even larger than projected under method 1, which is related to the projected output of livestock products in 2000. For example, IFPRI's analysis of livestock consumption in the Third World shows that if per capita incomes in the developing countries continue to rise at rates attained during 1966-77, trend projected output of meat and milk would fall considerably short of demand at constant prices by the end of the century, even though output increased at 1961-77 trend growth rates. Meat and milk output growth rates would have to be raised 50 percent higher to balance the demand in the developing countries.[32] Even under an alternative scenario that projects a 25 percent slower growth in per capita income than the 1966-77 trend, the gaps between projected production and consumption of meat and milk would still be large, and domestic production would have to expand at rates higher than the 1961-77 trends to meet the projected demand.[33] In either case, the derived demand for cereal feed could be large, leading to even larger cereal deficits.

Between the early 1960s and mid-1970s, the 3.2 percent growth in consumption of meat was faster than production in developing countries, which rose at an average rate of 2.9 percent a year. The increase in domestic demand is reflected in the net exports of meat by Third World countries, which declined from 760,000 tons in the early 1960s to 300,000 tons in the mid-1970s. Developing countries had already become net importers of meat by the end of the 1970s. Using accelerated domestic production to substitute for imports would result in more rapid growth in feed use. Value added in the processing and manufacture of meat, eggs, and dairy products is high; thus developing countries may wish to make this substitution.[34] Taste preference for fresh meat and eggs, instead of imported frozen or packaged meat and egg powder, may also influence this decision.

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[30] Paulino, *Food in the Third World.*

[31] Ibid. This study projected the output of major food crops as a group, not separately for cereals and noncereals. Hence separate estimates of projected deficits in cereals are not available.

[32] Sarma and Yeung, *Livestock Products in the Third World.*

[33] Ibid. Part of the gap could be filled through imports from developed countries, but some of the developing countries might decide to meet the increased demand through increased domestic production. The basis for the two income trend scenarios is discussed in Chapter 7 of that report. Further, these projections of demand and supply assume constant relative prices.

Consequences of Easing Marketing and Price Constraints

Livestock products are perishable and require refrigerated storage and transport to facilitate their marketing, particularly in tropical countries.[35] Well-organized slaughterhouses are often located in or around urban areas, and the rural population does not have easy access to them. Thus in those developing countries where infrastructure facilities are not developed, output growth, and consequently consumption growth, have been constrained.

Taking, for example, the basic data considered earlier for the early 1960s and mid-1970s, consumption of meat increased 3.2 percent a year in the 104 study countries taken as a whole. During the same period, population rose 2.6 percent, resulting in a per capita increase in meat consumption of 0.6 percent a year. As per capita incomes grew at 3.4 percent, the implied overall demand elasticity came close to 0.2. Cross-section studies show, on the other hand, a much higher average income elasticity of demand for meat. Without the supply constraints, consumption would have grown even faster. The story is similar for milk and eggs. With increasing per capita incomes and improved infrastructure development, either through public or private investment, marketing constraints could be eased, leading to more rapid growth in output and consumption of livestock products in the future.

In countries where the higher demand for livestock products resulting from rising per capita incomes and increasing urbanization cannot be met by increased domestic supplies, prices of these products rise. This happens particularly when domestic supplies cannot be fully augmented through imports because of limitations of trade in these commodities, such as trade barriers, perishability, and storage and handling problems. A recent study in the Philippines found significant negative own-price elasticities for meat. Moreover, demand of lower-income groups was much more price responsive than that of higher income groups.[36] If the constraints on trade were not operating, the growth in consumption would have been more rapid.

Improvements in Feeding Efficiency and the Feeding Ratio

The assessment of expected growth in cereal feed use in 1990 and 2000 under alternative assumptions in the preceding chapter was beset with difficulties, partly because inadequate data precluded a better understanding of the processes through which increases in derived demand for feed take place. With the adoption of improved breeding and scientific feeding practices, feeding efficiency increased and feeding ratio declined over time in some of the developed countries with relatively more advanced livestock production systems. On the other hand, in the developing countries, aggregated data show increases in the feeding ratio if only feedgrain is taken into consideration.

Improved breeding and scientific feeding have reduced the feed input-output ratio for each species within a specific production system. However, modern livestock production systems based on intensive grain feeding are gradually replacing traditional scavenging systems in developing countries. Moreover, there has been a gradual shift in the output mix away from beef production toward poultry, pork, and dairy products. These two factors have gradually led to higher feeding ratios. In the long run, however, feed efficiency could improve in the developing countries also. This will tend to reduce the prices of livestock products, thus increasing the demand for them and also the derived demand for feed. Therefore, even if the direct effect of improving feed efficiency is to reduce the overall feed demand, the indirect effect will be offsetting.

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[34] When world prices of milk powder are low, many developing countries may not have comparative advantage in encouraging domestic production of milk. Still, several countries do so, and the reasons for this should be studied further.

[35] The problem of perishability of livestock products may be partly overcome through trading in live animals; however, such transport over long distances and across international borders raises another set of problems.

[36] B. Ragalado, "The Distributional Impact of Food Policies on Human Nutrition in the Less Developed Countries—The Case of the Philippines," (M.S. thesis, University of the Philippines at Los Baños, 1984).

In developed countries more cereal grains are used for feed than directly for food. It is clear that with rising per capita incomes, this phenomenon will extend to developing countries, as has already occurred in a number of Third World countries. An assessment of the extent of this change and how long it will take is difficult. The small proportion of feed use in total domestic utilization of cereals at present holds down the weighted average income elasticity in several of the developing countries. However, the weighted average elasticity, based on empirical data for the countries discussed in Chapter 6, does not allow for changing feeding ratios. When these feeding ratios increase rapidly, either because of changes in the composition of meat or changes in feed components and their relative prices, the weighted average elasticity will also rise.

In some countries of Latin America where current levels of meat consumption are already high, the income elasticity of demand for meat is relatively low, but higher than that for cereals for food, because the income elasticity for cereal feeds declines less rapidly than that for food.[37] In these countries, the combined (weighted) elasticity of cereal demand for food and feed is not very high. On the other hand, in countries where per capita income growth, income elasticity of meat, and feeding ratios are all high, rapid expansion in cereal feed use can be expected, as in Taiwan and the Republic of Korea. The projected cereal feed use in 2000 would give a feeding ratio ranging from 2.9 to 3.4 for all the Third World countries taken together, as compared to a developed-country average of 3.6 in 1980.

The Relationship Between Livestock Development Strategy and Feed Demand

The derived demand for feed depends upon the composition of livestock output and the strategy for livestock development that is adopted. If poultry and pig raising and the dairy industry are encouraged, and thus grow more quickly, the demand for concentrate feeds with grain components could be even larger. Also, if more commercial and semicommercial enterprises develop for livestock industry expansion, the growth in grain-based feed demand may be much more rapid than it would be if development is organized through rural cooperatives or other forms of labor-intensive production strategies. In the latter case, greater use could be made of locally available agricultural by-products and wastes, leading to reduction in costs and hence to larger consumption of livestock products.

Coarse grains are often grown on poor soils by small farmers, and the higher demand for such grains could result in increased incomes for the poor.

Larger Use of By-Products and Wastes

It is likely that many agricultural by-products and wastes, though available, are not at present being utilized as livestock feed, partly because their bulkiness and the scattered nature of agricultural production result in high collection costs, and partly because of lack of knowledge regarding their suitability for feed use. However, the potential for their increased use in the future exists. In some cases, these products may need further processing for which the technology may not now be available. Though the compound feed industries in developing countries "generally follow the technology evolved in developed countries, there are no technical reasons to prevent the use of larger amounts of locally available noncereal feed compounds."[38] Developing countries may need to spend more resources on development of technology to enable greater use of such materials. In addition, governments may have to offer price and other incentives to encourage their use. These questions need further study in the context of rapidly growing feed demand.

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[37] John W. Mellor, "Third World Development: Food, Employment and Growth."

Cereal Feed Use and Food Security

Although IFPRI projections are based on constant relative price assumptions, realized feed demand will depend upon a host of other factors including food prices, feeding ratios, and so forth. For developing countries, the use of grains as livestock feed has food security implications. In several of these countries, feedgrains are diverted to food use in drought years, adversely affecting livestock numbers and output. This has implications for short-term food security, medium-term nutrition, and income and employment, particularly for small farmers for whom livestock is a major source of livelihood. Livestock is treated as a store of wealth and a source of savings in African countries. It is a hedge against crop failure, though in drought years losses in livestock are more widespread, and it may take two to five years for farmers to recoup their losses.

Even if part of Third World deficits in meat and milk are met with imports from developed countries, the derived demand for cereal feed in the developed countries would increase, reducing the overall quantities available for direct consumption. As was explained in *Livestock Products in the Third World,* coarse grains are directly consumed as food in developing countries, and their increased feed use could mean a diversion from food use. Competition between the two uses may result in higher prices, which would cause hardship to the most vulnerable population groups. Moreover, a food-feed competition for the use of grains may develop not only between the rich and the poor people within a country, but also between the richer and poorer countries.[39] As Yotopoulos observes, "In the traditional food-feed controversy, animals competed with people for feed versus food. The modern variant has retained this aspect through competition for land. But another dimension has been added: people who compete with people for the indirect versus direct consumption of cereals. In this competition between the rich and poor, relative affluence for the first time has become one of the great claimants on world food supplies."[40]

Need for Research and Improved Data

In the middle and high-income developing countries, with fewer foreign exchange constraints, deficits in cereals for feed could be met from imports, but in other countries special measures are needed to meet the shortage by increasing domestic production of feedgrains or by substituting other feeds. Food, feed, and livestock policies, including incentives and infrastructure development, need to be reviewed and modified where necessary. Improvements in yields of feedgrains and feed efficiency through emphasis on research and development of feed technology could also partly alleviate the situation. Promoting cultivation of feedgrains, especially coarse grains, can be justified from an equity standpoint because coarse grains are usually grown on poorer lands by poor farmers. In addition, the scope for substitution of noncereals, such as cassava supplemented by proteins, for cereals in concentrate feeds needs to be explored. For example, in some of the developing countries where cassava is grown, such substitution becomes feasible with higher yields and lower unit costs of cassava production. Nevertheless, demand for feeds and fodder is likely to increase rapidly in the coming decades, resulting in increased competition for land. Land will have to be used more intensively, and more attention will have to be given to studies on new sources of feed, greater use of by-products and agricultural wastes, and compound feeds. This means that more resources will have to be allocated to research on feeds and fodder at both national and international levels.

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[38] Food and Agriculture Organization of the United Nations, *Changing Patterns and Trends in Feed Utilization* (Rome: FAO, 1983).

[39] Sarma and Yeung, *Livestock Products in the Third World.*

[40] Yotopoulos, "Middle Income Classes and Food Crises."

A basic problem in analyzing feed trends is the lack of reliable data on feed use. It is therefore important that developing countries take steps—perhaps in cooperation with FAO and with their technical assistance where necessary—to collect and publish regular data on livestock feed and fodders. In the case of cereal feeds, two distinct feed sectors must be included: the first is grains used in feed manufacturing industries, both small- and large-scale. It should be relatively easy to collect these data from feed manufacturers' associations or other related organizations. Second and more difficult are data on grains used directly as feed by farmers out of their home-grown produce or local purchases. These estimates have to be based on household or farm business surveys. Another area in which available data are inadequate is the utilization of feeds by type of livestock output. In view of the rising importance of livestock feed, concerted efforts are needed to fill these data gaps quickly.

APPENDIX 1: DATA AND METHODOLOGY

The data on use of cereals for livestock feed and on livestock numbers and output used in the study are taken from the international data base of FAO. The annual data on cereals used as feed for the years 1966-80 are from the FAO "Agricultural Supply/Utilization Accounts Tape" for 1981. Statistics of livestock numbers for 1980 are from the *FAO Production Yearbook, 1982.* Other data on livestock output are obtained from the FAO "Production Yearbook Tape, 1981." Projections of output and consumption of livestock products to 1990 and 2000 are based on IFPRI Research Report 49, by J. S. Sarma and Patrick Yeung, *Livestock Production in the Third World: Past Trends and Projections to 1990 and 2000,* 1985. The sources of other data, such as trade and prices, are quoted under their respective tables.

Past Trends

The methodology approach taken in this report is first to analyze the past trends of the variables, which are based on annual averages for the two five-year periods 1966-70 (late 1960s) and 1976-80 (late 1970s) for individual countries or subregions. These averages are used for absolute measures of change and relative distributions. The annual growth rates calculated for this period represent the compound growth rates between the mid-years of the two quinquennia.

In addition, trend growth rates of cereal feed are also calculated using the exponential growth equation fitted to the annual data on feed use; trend values for 1966 and 1980 are worked out for each country and subregion. The trend growth rates for the regions and other aggregates are based on the aggregate trend values at the beginning and end of the period, using the formula

$$Y_t = Y_o(1 + r)^t,$$

where Y_o and Y_t are the trend estimates of the variable in the base period (o) and the end year (t), and r represents the annual growth rate of the variable.

Projections of Feed Use

Projections of feed use to 1990 and 2000 are made using five alternative methods.

Method 1

This method is based on the assumption that the projected feed use of cereals in 1990/2000 equals the projected output of livestock products in 1990/2000 multiplied by the corresponding projected feeding ratio.[41] Output of meat, milk, or eggs is projected as an extrapolation of 1961-77 trends of each of these products in each of the 104 developing countries included in the study. These data are taken from *Livestock Products in the Third World* at the country level and have been aggregated at the subregional level.

The projected outputs are converted into Livestock Output Units (LOUs), using the formula: meat + 1/10 of milk + eggs for each subregion.

Annual values of feeding ratios for the period 1966-80 are computed, and linear trends are fitted to them. Projected trend values of these ratios for 1990 and 2000 are then obtained. The product of the projected output of livestock products and the corresponding feeding ratio gives the projected feed use.

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[41] Hereafter, the term feed use relates to cereal feeds only; trends relate to exponential time trends.

Method 2

This method assumes that the difference between the growth rate in feed use and that in livestock output in each subregion will continue to 1990 and 2000. The growth rates implied in the livestock output projections for 1990/2000 over the 1980 trend level were first calculated for each subregion. Then the difference between the 1966-80 trend growth rate of feed use and that of livestock output in the subregion during the same period was computed. This difference was added to the 1980-1990/2000 growth rate of livestock output, and the adjusted growth rates in feed use were obtained. The trend value of feed use in 1980 was projected to 1990/2000 using the adjusted growth rate for each subregion.

$$R_{cf}\ 1980\text{-}1990/2000 = r_{cf}\ 1966\text{-}80 - r_{lp}\ 1966\text{-}80 + R_{lp}\ 1980\text{-}1990/2000,$$

where

R_{cf} = the adjusted growth rate in feed use over 1980-1990/2000,

r_{cf} = the growth rate in feed use for 1966-80,

r_{lp} = the growth rate in livestock output for 1966-80, and

R_{lp} = the projected growth rate in livestock output for 1980-1990/2000.

$$\text{Projected feed use in 1990/2000} = \text{Trend value of feed use in 1980} \times (1 + R_{cf})^{10/20}.$$

This is done for each subregion, and the data for the 10 subregions are then aggregated.

Method 3

This method assumes that the trend growth rate for feed use in each subregion over the 1966-80 period is extrapolated to 1990 and 2000.

$$\text{Projected feed use in 1990/2000} = \Sigma_{(\text{subregions})}\ \text{Trend value of feed use in each subregion in 1980} \times (1 + r_{cf})^{10/20},$$

where r_{cf} has the same meaning as above.

Method 4

In this method, trend growth rates in feed use in each of the 29 countries in which feed use exceeds 500,000 tons in 1980 are extrapolated. For the remaining 75 countries, these are grouped into four classes according to the level of per capita income, and the trend growth rate of feed use in each of the four classes is used in projecting the feed use. These two sets of figures are aggregated to give the projected feed use in 1990/2000.[42]

Method 5

In method 5, the income elasticity of demand for meat is used as a proxy for that of cereal feed. Thus the projected feed use takes into account the rise in population and per capita income growth; the latter is based on the continuation of 1966-80 trends in per capita income.

$$\text{Projected feed use in 1990/2000} = \text{Trend value of cereal feed use in 1980}\ (1 + r_p)^{10/20} \times (1 + r_y \times \eta_m)^{10/20},$$

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[42] An upper limit of 10 percent has been imposed in extrapolating the individual country growth rates in feed use.

where

r_p = the rate of population growth,

r_y = the rate of per capita income growth,[43] and

η_m = the income elasticity of demand for meat.

All these projections assume constant relative prices. These are computed for each country and aggregated for the 104 developing countries. This is the method adopted in the IFPRI research report *Food in the Third World.*

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[43] A lower limit of 0.5 and an upper limit of 6.0 percent were imposed on the growth rates of per capita income.

APPENDIX 2:
CLASSIFICATION OF COUNTRIES SELECTED FOR THE STUDY

Table 20—Classification of developing countries by per capita income, income growth, and livestock output growth

	1980 GNP Per Capita				1961-80 Growth of GNP Per Capita				Growth of Livestock Output			
Region/Subregion/Country	Less Than $250	$250-$499	$500-$1,999	2,000 or More	Less Than 1 Percent	1.0-2.9 Percent	3.0-4.9 Percent	5 Percent or More	Less Than 1 Percent	1.0-2.9 Percent	3.0-4.9 Percent	5 Percent or More
Asia												
South Asia												
Bangladesh	x				x					x		
Bhutan	x				x					x		
India	x					x					x	
Nepal	x				x					x		
Pakistan		x				x					x	
Sri Lanka		x				x			x			
East and Southeast Asia												
Burma	x					x				x		
Fiji			x				x				x	
Hong Kong				x				x				x
Indonesia		x					x					x
Kampuchea	x				x				x			
Korea, Democratic People's Republic of			x				x					x
Korea, Republic of			x					x				x
Laos	x					x				x		
Malaysia			x				x				x	
Mongolia			x				x			x		
Papua New Guinea			x			x					x	
Philippines			x			x					x	
Singapore				x				x				x
Thailand			x				x				x	
Vietnam	x				x						x	

North Africa/Middle East												
Northern Africa												
Algeria				x			x				x	
Egypt			x				x			x		
Libya				x			x					x
Morocco			x			x				x		
Sudan		x			x						x	
Tunisia			x				x				x	
Western Asia												
Afghanistan	x				x				x			
Cyprus				x				x			x	
Iran				x				x				x
Iraq				x				x			x	
Jordan			x					x			x	
Kuwait				x	x							x
Lebanon			x				x		x			
Oman				x				x		x		
Saudi Arabia				x				x				x
Syria			x				x					x
Turkey			x				x				x	
Yemen Arab Republic			x					x		x		
Yemen People's Democratic Republic		x						x		x		
Sub Saharan Africa												
West Africa												
Benin		x				x					x	
Burkina Faso	x					x			x			
Chad	x				x				x			
Côte d'Ivoire			x			x						x
Gambia		x					x				x	
Ghana			x		x						x	
Guinea		x				x					x	
Guinea-Bissau	x				x					x		
Liberia			x			x					x	
Mali	x					x			x			
Mauritania		x				x			x			
Niger		x			x				x			
Nigeria			x				x				x	
Senegal		x			x						x	
Sierra Leone		x				x					x	
Togo		x				x					x	

Table 20—Continued

Region/Subregion/Country	1980 GNP Per Capita				1961-80 Growth of GNP Per Capita				Growth of Livestock Output			
	Less Than $250	$250-$499	$500-$1,999	2,000 or More	Less Than 1 Percent	1.0-2.9 Percent	3.0-4.9 Percent	5 Percent or More	Less Than 1 Percent	1.0-2.9 Percent	3.0-4.9 Percent	5 Percent or More
Central Africa												
Angola			x		x					x		
Burundi	x					x						x
Cameroon			x			x						x
Central African Republic		x			x						x	
Congo			x			x						x
Gabon				x				x				x
Rwanda	x					x						x
Zaire	x				x					x		
Eastern and Southern Africa												
Botswana			x					x			x	
Ethiopia	x					x			x			
Kenya		x				x					x	
Lesotho			x					x	x			
Madagascar		x			x					x		
Malawi		x					x					x
Mauritius			x			x					x	
Mozambique		x			x					x		
Namibia			x		x				x			
Réunion				x		x					x	
Somalia	x				x					x		
Swaziland			x					x		x		
Tanzania		x				x				x		
Uganda			x		x						x	
Zambia			x		x						x	
Zimbabwe			x		x						x	
Latin America												
Central America and the Caribbean												
Costa Rica			x				x					x
Cuba			x				x			x		
Dominican Republic			x				x				x	
El Salvador			x			x						x
Guatemala			x			x					x	

Haiti	x				x						x	
Honduras			x			x					x	
Jamaica			x			x					x	
Mexico				x			x					x
Nicaragua			x		x							x
Panama			x			x					x	
Trinidad and Tobago				x			x				x	
Upper South America												
Bolivia			x			x						x
Brazil				x				x			x	
Colombia			x				x				x	
Ecuador			x					x				x
Guyana			x			x					x	
Paraguay			x				x			x		
Peru			x		x						x	
Surinam				x				x			x	
Venezuela				x		x						x
Lower South America												
Argentina				x		x				x		
Chile				x	x					x		
Uruguay				x		x			x			
Total	19	19	46	20	27	36	23	18	13	23	44	24

Source: World Bank, "Gross National Product by Country Data Tape, 1961-80," Washington, D.C., 1981; Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1981;" Rome, 1982; and United Nations, Department of International Economic and Social Affairs, "World Population Prospects as Assessed in 1982," New York, 1983 (computer printout).

Notes: The income groups are determined by the GNP per capita calculated in U.S. dollars, based on the 1961-80 trend of real GNP. Livestock output is expressed as livestock output units obtained by adding meat plus one-tenth of milk plus eggs. Then the countries are classified according to the 1966-70 to 1976-80 average annual growth rate of this livestock output.

APPENDIX 3: SUPPLEMENTARY TABLES

Table 21—World cereal feed use and total output of cereals by type, 1980

Region/Feed Use/Output	Coarse Grains	Paddy	Wheat	Total Cereals
		(million metric tons)		
World				
Feed use	506	32	143	681
Total output	720	399	446	1,565
All study countries				
Feed use	65	17	18	100
Total output	161	232	96	488
Other developing countries[a]				
Feed use	48	13	13	74
Total output	82	143	55	280
Developed countries[b]				
Feed use	393	2	112	507
Total output	477	24	295	796

Sources: Food and Agriculture Organization of the United Nations, *Production Yearbook, 1982* (Rome: FAO, 1983); and Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Note: Parts may not add to total due to rounding.

[a] This category includes China and 24 small developing countries that were excluded from this study.

[b] Countries are grouped according to the classification system of the Food and Agriculture Organization of the United Nations.

Table 22—Cereal feed use by type, 1980

Commodity	Feed Use	Commodity	Feed Use
	(1,000 meteric tons)		(1,000 metric tons)
Wheat	3,985	Rye bran[a]	55
Wheat flour	108	Oats	827
Wheat bran[a]	13,995	Rolled oats	1
Subtotal for wheat	18,088	Millet	1,113
Paddy	2,317	Millet bran[a]	1,200
Milled rice	274	Sorghum	10,802
Broken rice	17	Sorghum flour	85
Rice bran[a]	13,972	Sorghum bran[a]	812
Rice bran cake[a]	525	Buckwheat	30
Subtotal for paddy	17,105	Buckwheat bran[a]	4
Barley	10,396	Canary seed	59
Maize	35,124	Mixed grain	145
Maize flour	3	Grain not elsewhere specified	285
Maize bran[a]	3,879	Flour not elsewhere specified	20
Maize cake[a]	68	Bran not elsewhere specified[a]	69
Maize gluten[a]	[b]	Subtotal for coarse grains	65,141
Rye	164		
Rye flour	[b]	Total	100,334

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

[a] This is a by-product.

[b] Less than 500 metric tons.

Table 23—World livestock numbers, 1980

Country Group	Cattle and Buffalo	Sheep and Goats	Pigs	Poultry
		(millions)		
World[a]	1,325	1,578	795	6,607
Developed economies	425	552	340	3,159
Developing economies	899	1,026	455	3,448
104 study countries[b]	829	840	132	2,578
Asia	367	223	48	829
North Africa/Middle East	62	265	. . .	354
Sub-Saharan Africa	131	209	12	433
Latin America	268	143	72	961

Source: Food and Agriculture Organization of the United Nations, *Production Yearbook, 1982* (Rome: FAO, 1983).
Notes: Parts may not add to total due to rounding. The ellipsis indicates a nil or negligible amount.
[a] Countries are grouped according to the classification system of the Food and Agriculture Organization of the United Nations. China is included.
[b] Countries are grouped according to the classification system of the International Food Policy Research Institute. China is excluded.

Table 24—Trends in cereal feed use, by region, 1966-70 and 1976-80

Region	Coarse Grains	Paddy	Wheat	Total Cereals
		(million metric tons)		
Asia				
1966-70	4.83	11.09	2.92	18.84
1976-80	8.39	14.73	5.20	28.32
Growth rate (percent)	5.68	2.88	5.94	4.16
North Africa/Middle East				
1966-70	8.42	0.34	3.81	12.54
1976-80	13.57	0.32	6.66	20.46
Growth rate (percent)	4.88	−0.40	5.73	5.02
Sub-Saharan Africa				
1966-70	2.32	0.21	0.23	2.76
1976-80	3.05	0.27	0.43	3.75
Growth rate (percent)	2.76	2.60	6.50	3.10
Latin America				
1966-70	19.39	0.77	2.87	23.03
1976-80	31.62	1.30	4.49	37.40
Growth rate (percent)	5.01	5.34	4.56	4.97
Total 104 countries				
1966-70	34.96	12.41	9.84	57.21
1976-80	56.63	16.63	16.78	90.03
Growth rate (percent)	4.94	2.97	5.48	4.64

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Table 25—Cereal feed use of grains and brans and by-products, by region and commodity, 1966-70 and 1976-80

Region/Commodity	Grains		Brans and By-Products	
	1966-70	1976-80	1966-70	1976-80
	(million metric tons)			
Asia				
Coarse grains	2.77	5.79	2.06	2.60
Wheat	0.25	0.45	2.67	4.75
Paddy	1.52	2.11	9.57	12.62
Total	4.54	8.35	14.30	19.97
North Africa/Middle East				
Coarse grains	7.98	13.04	0.44	0.53
Wheat	1.43	2.57	2.38	4.09
Paddy	. . .	. . .	0.34	0.32
Total	9.41	15.61	3.16	4.94
Sub-Saharan Africa				
Coarse grains	0.89	1.29	1.44	1.76
Wheat	. . .	. . .	0.23	0.42
Paddy	0.09	0.11	0.12	0.16
Total	0.98	1.40	1.79	2.34
Latin America				
Coarse grains	18.58	30.57	0.80	1.05
Wheat	0.69	1.23	2.18	3.26
Paddy	0.02	0.19	0.75	1.10
Total	19.29	31.99	3.73	5.41
All study countries				
Coarse grains	30.22	50.68	4.74	5.94
Wheat	2.37	4.26	7.46	12.52
Paddy	1.62	2.41	10.78	14.21
Total	34.21	57.35	22.98	32.67

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Note: The ellipses indicate a nil or negligible amount.

Table 26—Cereal feed use and total livestock output, by region and subregion, 1966-70 and 1976-80

Region/Subregion	Cereal Feed Use			Livestock Output[a]		
	1966-70	1976-80	Growth Rate	1966-70	1976-80	Growth Rate
	(million metric tons)		(percent/ year)	(million metric tons)		(percent/ year)
Asia	18.84	28.32	4.16	7.73	10.94	3.53
South Asia	10.05	13.27	2.82	4.50	6.04	2.99
East and Southeast Asia	8.79	15.05	5.52	3.23	4.90	4.25
North Africa/Middle East	12.57	20.56	5.04	3.88	5.58	3.70
Northern Africa	3.11	5.90	6.62	1.41	1.94	3.23
Western Asia	9.46	14.65	4.47	2.47	3.64	3.96
Sub-Saharan Africa	2.76	3.75	3.10	3.42	4.24	2.17
West Africa	1.05	1.42	3.07	1.20	1.50	2.24
Central Africa	0.20	0.31	4.31	0.24	0.36	4.15
Eastern and Southern Africa	1.51	2.01	2.96	1.98	2.38	1.86
Latin America	23.03	37.40	4.97	13.24	18.59	3.45
Central America	5.10	10.41	7.40	2.72	4.27	4.62
Upper South America	11.41	19.43	5.47	5.82	8.93	4.37
Lower South America	6.53	7.56	1.48	4.71	5.39	1.39
Total 104 countries	57.21	90.03	4.64	28.27	39.35	3.36

Sources: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982; and Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1981," Rome, 1982.

[a] Livestock output is expressed in livestock output units derived as meat + 1/10 milk + eggs.

Table 27—Production of compound feed, selected developing countries, 1974-76 average and 1980

Country	1974-76 Average	1980
	(1,000 metric tons)	
Argentina	1,100	1,850
Brazil	6,900	11,400
Colombia	290	1,100
Egypt	150	1,640
India	700	1,150
Iran	100	200
Korea, Republic of	1,070	3,500
Malaysia	319	475
Mexico	3,167	4,600
Morocco	80	210
Nigeria	135	400
Peru	320	467
Philippines	747	1,150
Saudi Arabia	15	300
Thailand	700	1,100
Tunisia	130	450
Turkey	484	1,449
Venezuela	1,233	1,700
Other developing countries	2,675	6,562
Total developing countries (excluding China)	20,315	39,703

Source: Food and Agriculture Organization of the United Nations, *Changing Patterns and Trends in Feed Utilization* (Rome: FAO, 1983).

Table 28—Income elasticity of demand for cereals and livestock products, selected countries, 1980 and 2000

Country/Year	Cereals	Beef	Mutton	Pigmeat	Poultry	Cow's Milk (Whole)	Eggs
Brazil							
1980	0.15	0.58	0.29	0.29	0.64	0.45	0.55
2000	0.05	0.45	0.25	0.25	0.46	0.15	0.41
Egypt							
1980	0.04	0.80	0.90	0.70	1.30	1.00	0.70
2000	0.02	0.80	0.90	0.70	1.30	0.59	0.70
India							
1980	0.25	1.20	1.20	0.80	1.50	0.80	1.00
2000	0.23	1.20	1.20	0.80	1.50	0.80	1.00
Indonesia							
1980	0.29	1.50	1.60	0.80	1.50	0.20	1.20
2000	−0.40	1.50	1.60	0.80	1.50	0.20	1.20
Kenya							
1980	0.35	1.00	0.90	0.70	1.20	0.59	1.30
2000	0.02	1.00	0.90	0.70	1.20	0.51	1.30
Korea, Republic of							
1980	0.09	0.80	1.00	0.73	1.00	0.49	0.80
2000	−0.04	0.42	1.00	0.40	1.00	0.24	0.42
Malaysia							
1980	0.14	0.49	0.32	0.41	0.87	0.57	0.73
2000	−0.21	0.49	0.32	0.41	0.52	0.40	0.73
Mexico							
1980	−0.10	0.59	0.69	0.49	0.93	0.68	0.59
2000	−0.10	0.50	0.57	0.43	0.68	0.56	0.50
Nigeria							
1980	0.17	1.20	1.30	1.00	1.00	1.20	1.20
2000	0.15	1.20	1.30	1.00	1.00	1.20	1.20
Philippines							
1980	0.22	1.20	0.90	0.93	1.00	1.50	1.00
2000	0.20	1.20	0.90	0.62	1.00	1.50	1.00
Thailand							
1980	0.06	0.56	0.50	0.47	0.50	0.80	0.50
2000	−0.13	0.41	0.50	0.36	0.50	0.80	0.50
Turkey							
1980	−0.05	0.80	1.00	0.50	1.20	0.80	0.80
2000	−0.47	0.80	1.00	0.50	1.20	0.63	0.80

Source: Food and Agriculture Organization of the United Nations, "Parameters of the Demand Functions, Fifth Run," Rome, April, 1978 (computer printout).

Table 29—Ratio of foodgrains to food and feedgrains, selected countries, 1980 to 2000

Country	1980	1985	1990	1995	2000
Brazil	0.43	0.40	0.38	0.35	0.33
Egypt	0.74	0.71	0.67	0.64	0.60
India	0.90	0.89	0.89	0.88	0.87
Indonesia	0.91	0.89	0.85	0.79	0.71
Kenya	0.83	0.82	0.80	0.79	0.77
Korea, Republic of	0.71	0.67	0.64	0.61	0.58
Malaysia	0.66	0.63	0.59	0.55	0.50
Mexico	0.52	0.49	0.46	0.43	0.40
Nigeria	0.93	0.92	0.90	0.88	0.86
Philippines	0.80	0.78	0.77	0.75	0.74
Thailand	0.77	0.75	0.73	0.71	0.69
Turkey	0.47	0.43	0.37	0.32	0.27

Source: Calculated from computer printouts used in Leonardo A. Paulino, *Food in the Third World: Past Trends and Projections to 2000,* Research Report 52 (Washington, D.C.: International Food Policy Research Institute, 1986).

Table 30—Selected developing countries with cereal feed use exceeding 500,000 metric tons, 1980

Country	Feed Use	Country	Feed Use
	(million metric tons)		(million metric tons)
Algeria	1.06	Malaysia	1.09
Argentina	5.10	Mexico	9.52
Bangladesh	1.73	Morocco	1.41
Brazil	19.37	Nigeria	0.67
Burma	0.98	Pakistan	1.41
Chile	1.22	Peru	0.75
Colombia	1.24	Philippines	1.72
Cuba	1.03	Saudi Arabia	0.98
Egypt	3.13	Syria	1.30
India	9.50	Thailand	2.71
Indonesia	2.48	Tunisia	0.57
Iran	2.78	Turkey	8.81
Iraq	0.74	Venezuela	2.08
Korea, Democratic People's Republic of	2.58	Vietnam	1.02
Korea, Republic of	3.42	Total for 29 countries	90.40
		Total for 104 countries	100.33

Source: Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982.

Table 31—Cereal feed use projections under method 1, 1990 and 2000

	Trend Value	Projected Cereal Feed Use	
Region/Subregion	**1980**	**1990**	**2000**
		(million metric tons)	
Asia	30.69	44.33	68.45
South Asia	14.10	16.67	20.92
East and Southeast Asia	16.59	27.66	47.53
North Africa/Middle East	21.70	33.85	56.33
Northern Africa	6.60	11.80	21.19
Western Asia	15.10	22.05	35.14
Sub-Saharan Africa	4.03	5.77	8.49
West Africa	1.50	1.77	2.46
Central Africa	0.33	0.55	0.89
Eastern and Southern Africa	2.20	3.45	5.14
Latin America	41.66	66.69	111.63
Central America	12.32	22.36	41.79
Upper South America	21.19	34.99	58.94
Lower South America	8.15	9.34	10.90
Total	98.08	150.64	244.89

Sources: Food and Agriculture Organization of the United Nations, "Production Yearbook Tape, 1981," Rome, 1982; Food and Agriculture Organization of the United Nations, "Agricultural Supply/Utilization Accounts Tape, 1981," Rome, 1982; and J. S. Sarma and Patrick Yeung, *Livestock Products in the Third World: Past Trends and Projections to 1990 and 2000,* Research Report 49 (Washington, D.C.: International Food Policy Research Institute, 1985).

Notes: Method 1 is based on projected values of feeding ratios in 1990 and 2000 applied to projected output of livestock products expressed in terms of livestock output units, which are obtained by adding projections for meat + 1/10 milk + eggs. Parts may not add to total because of rounding.

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THE FOOD STAMP SCHEME IN SRI LANKA: COSTS, BENEFITS, AND OPTIONS FOR MODIFICATION

Neville Edirisinghe

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CONTENTS

Foreword

1. Summary 9

2. Introduction: The Policy Change 11

3. Price Subsidy and Food Stamp Benefits 15

4. The Beneficiaries 21

5. The Effect on Fiscal Costs and Income Distribution 29

6. Patterns of Food Consumption and Nutrition Before and After the Subsidy Program Change 34

7. Inflation and the Real Value of Food Stamps 43

8. Impact of Food Stamps on Nutrition and Cost-Effectiveness 49

9. The Nutrition of Children and Income Transfers 59

10. Policy Implications 65

Appendix 1: Supplementary Tables 71

Appendix 2: Data Sources 72

Appendix 3: Estimation of Food Stamp Receipts by Households 75

Appendix 4: Estimation of Apparent Calorie Consumption 78

Appendix 5: Recipient Attitude Toward Food Stamps 79

Bibliography 82

TABLES

1. Changes in rice ration allotment and prices of ration and open market rice, 1948-79 12
2. Food subsidies by commodity group and expenditure quintile, 1978/79 16
3. Food subsidies by commodity group and sector, 1978/79 16
4. Food stamp receipts by expenditure quintile, 1981/82 17
5. Value of food stamps as a share of the general food subsidy and of the rice ration subsidy received during 1978/79, by expenditure quintile 18
6. Subsidies as a share of total expenditures by sector and expenditure quintile, 1978/79 and 1981/82 19
7. Share of subsidy in the total household budget, by occupational group and expenditure quintile, 1978/79 and 1981/82 20
8. Percent of households receiving food stamps, 1981/82, and general food subsidy and rice ration subsidy, 1978/79, by expenditure quintile 22
9. Share of households receiving food stamps and the value of food stamps received, by per capita income quintile, 1981/82 23
10. Share of households receiving food stamps and the value of food stamps received, by total household income quintile, 1981/82 23
11. Share of households receiving food stamps, 1981/82, and rice rations, 1978/79, by sector, zone, and expenditure quintile 24
12. Share of households receiving food stamps, 1981/82, and rice rations, 1978/79, by ethnic group and expenditure quintile 25
13. Share of occupational groups and expenditure quintiles receiving food stamps, 1981/82, and rice subsidies, 1978/79 26
14. Distribution of food stamp payments by expenditure quintile and sector, 1981/82 27
15. Distribution of the total subsidy, by expenditure quintile and sector, 1978/79 27
16. Mean household income by household income quintile, 1978/79 27
17. Fiscal costs of food subsidy programs, 1966/67-1984 30
18. Fiscal costs of the food subsidy under different assumptions, 1979-84 32
19. Gini ratios and income shares with and without food subsidies, 1978/79 and 1981/82 33
20. Estimates of the food share function, 1978/79 and 1981/82 36
21. Proportion of expenditures allocated to food consumption, by sector and expenditure quintile, 1978/79 and 1981/82 37

22. Apparent mean calorie consumption, by sector, 1978/79 and 1981/82 38

23. Apparent per capita daily calorie consumption by expenditure decile and sector, 1978/79 and 1981/82 39

24. Share of households that are "ultra-poor", by expenditure quintile, 1978/79 and 1981/82 41

25. Share of agricultural households that are "ultra-poor", 1978/79 and 1980/82 41

26. Price and budget shares of major food and nonfood commodities, 1978/79 and 1981/82 44

27. Cost-of-living indexes for 1981/82, with 1978/79 as the base year, by expenditure quintile 45

28. Budget shares of nonfood commodities, by expenditure quintile, 1978/79 and 1981/82 46

29. Calorie consumption and price and calorie and food price indexes, by sector and expenditure quintile 48

30. Share of food subsidies in food budgets of recipients by sector and expenditure quintile, 1978/79 and 1981/82 50

31. Tests for differences in marginal propensities to consume calories out of subsidy income and all other disposable incomes, 1978/79 and 1981/82 52

32. Tests for differences in marginal propensities to spend on food out of subsidy income and all other disposable incomes, 1978/79 and 1981/82 52

33. Estimates of the influence of different sources of income on total calories consumed, and on total food expenditures, 1978/79 and 1981/82 53

34. Contribution of food stamps to the calorie consumption of recipients, by expenditure quintile, 1981/82 54

35. Effects of food stamp allocations on the poorest 20, 30, and 40 percent of households, 1981/82 57

36. Effects of reallocating the food stamp budget under different targeting options 57

37. Share of preschool-aged children nutritionally at risk, by expenditure quintile, 1980-82 60

38. Share of children nutritionally at risk, by adequacy of calorie consumption, Kandy district, 1984 61

39. Estimates of the calorie-consumption function for preschool children and for other members of households receiving food stamps, Kandy district, 1984 62

40. Characteristics of households receiving food stamps and the effects of food stamps on the calorie consumption of preschool children and other household members, by expenditure quartile, Kandy district, 1984 63

41. Mean calorie adequacy ratios of preschool children and other members in households receiving food stamps, by expenditure quintile, Kandy district, 1984 64

42. Number of members in households eligible to receive food stamps 71

43. Calorie consumption per adult equivalent, by expenditure decile and sector, 1978/79 and 1981/82 71

44. Estimates from Consumer Finance Surveys and National Accounts of annual per capita food and total private consumption expenditures, 1978/79 and 1981/82 73

45. Households receiving food stamps, estimated from F&NPPD 1980-82 survey 76

46. Households receiving food stamps and value of stamps received, by expenditure quintile, Kalutara and Galle districts, 1980 76

47. Estimates of the subsidy, 1978/79 77

48. Weekly food purchase patterns using food stamps, Kandy district, 1984 81

ILLUSTRATIONS

1. Two possibilities for the Engellian relationship 35

2. Per capita calorie consumption, by expenditure quintile, 1978/79, 1980/81, and 1981/82 40

FOREWORD

Many developing countries attempt to assist low-income households to improve their nutritional intake by providing direct or indirect income transfers. The latter are more common and usually take the form of price subsidies on a range of staple foods. Direct transfers, such as issue of food coupons, are not as widely used as price subsidies. In this regard, the case of Sri Lanka is somewhat unusual, for over four decades it followed a policy of subsidizing food prices, and during the late 1970s, this policy was replaced by a direct transfer scheme in the form of a food stamp program.

An analysis of the former food subsidy scheme of Sri Lanka was the subject matter of IFPRI Research Report 13, *The Impact of Public Foodgrain Distribution on Food Consumption and Welfare in Sri Lanka,* by James D. Gavan and Indrani Sri Chandrasekera. This research report by Neville Edirisinghe provides an analysis of the food stamp scheme, which is but one element of a package of policy reforms aimed at greater economic growth undertaken recently in Sri Lanka. Insights from the Sri Lanka case should prove useful in planning income assistance programs to accompany structural changes in economies to bring about greater growth.

This report adds to an array of studies undertaken by IFPRI in the area of food price policies in general and food subsidies in particular. Several such studies have been published, including studies of policies in Brazil, Bangladesh, Kerala State in India, Sri Lanka, and Egypt.

This research was funded by the U.S. Agency for International Development (AID), Bureau for Science and Technology, Office of Nutrition, under the supervision of the Nutrition Economics Group, Office of International Cooperation and Development, of the United States Department of Agriculture (USDA). The assistance of many people at AID and USDA, and particularly that of Dr. Nicolaas Luykx of the Office of Nutrition and Dr. Roberta van Haeften of the Nutrition Economics Group, is acknowledged with thanks. Close collaboration was provided by the Colombo mission of AID. The collaborating agency from the government of Sri Lanka was the Food and Nutrition Policy Planning Division of the Ministry of Plan Implementation. This collaboration and the assistance provided by its head, Dr. Raja Ameresekere, are gratefully acknowledged. The Central Bank of Ceylon is specially thanked for making available data from its surveys, without which a comprehensive analysis may not have been possible.

John W. Mellor

Washington, D.C.
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This study benefited from the views and comments of many others. Dr. Per Pinstrup-Andersen, Director of the Food Consumption and Nutrition Program of the International Food Policy Research Institute, provided overall guidance and inspiration. My colleagues at IFPRI generously contributed their comments on this and earlier reports of the study. Special mention needs to be made of the three deputy directors of the Food and Nutrition Policy Planning Division who visited IFPRI to take part in the data analysis. Their insights were useful. From the inception of this project, Professor Priyani Soysa of the University of Ceylon provided valuable encouragement and support. Dr. B. V. de Mel of the Medical Research Institute and CARE, Colombo, also gave her fullest cooperation whenever it was required. These two outstanding personalities in the field of child nutrition in Sri Lanka are specially thanked.

I owe a special debt of gratitude to the authorities of the Central Bank of Ceylon for providing the survey data from the Consumer Finance Surveys conducted by the Central Bank during 1978/79 and 1981/82. This study would not have been possible without them.

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1

SUMMARY

In 1979, Sri Lanka replaced a four-decade-old food subsidy scheme characterized by general price subsidies and quantity rationing of rice, the main staple. This study examines the new food stamp scheme, its costs and benefits, and provides some guidelines for modifying the program. The need and potential for modification are discussed within the framework of the economic policy reforms in the late 1970s. These reforms attempted to reduce government intervention in the economy and give the market a larger role in determining prices of outputs and inputs and allocation of resources. The change in the subsidy program was intended to increase domestic savings, while attempting to protect low-income households from the effects of the removal of price subsidies. Only households whose declared incomes were less than a specified level received food stamps, which they could use to buy basic foods made available at authorized shops at nonsubsidized prices. Since its inception, the nominal value of the food stamps has not been changed.

The change to a nonindexed food stamp scheme has reduced the food subsidies' share in total government expenditure to about 3 percent in 1984 compared with around 15 percent during the mid-1970s. Its share of GNP dropped from about 5 percent to 1.3 percent. Whether all the savings have been diverted to investment activity is difficult to ascertain, given the increased subsidies allocated to some other government activities and wage increases to public sector employees to protect them from inflation.

The subsidy scheme replaced by the food stamp scheme gave subsidized rice rations to half the population; price subsidies on other major foods, such as wheat and sugar, were available to all. The highest per capita benefits from the latter subsidy accrued to the high-income households. When the food stamp subsidy began, its benefits constituted only 83 percent of the benefits from the price subsidies. Erosion of the real value of food stamps reduced this to 43 percent by 1981/82. Price subsidies formed nearly 18 percent of the household budget of the average rice ration recipient; the food stamp share was only 9.6 percent. The largest reduction in relative share was seen in the estate sector. This was caused mainly by elimination of the subsidy on wheat, an important staple for estate workers.

The targeting attempts under the curtailed rice ration scheme and the food stamp scheme restricted the transfers to only half of all households, but not all these households were in the lower half of the expenditure range. As a result, the lowest quintile—the quintile that forms the target group according to income criterion for targeting—received only 38 percent of the total food stamp outlay. Households in the lower 40 percent of the expenditure range, which includes most households consuming less than the recommended energy allowance, receive two-thirds of the total food stamp budget. Under the former scheme, this segment received only 50 percent of the total outlays on subsidies.

Between 1978/79, before the policy change, and 1981/82, after it, nearly 75 percent of the households either maintained or increased their per capita calorie consumption. This augurs well for the effect of economic growth on distribution given the drastic changes in the price structure after liberalization of the economy. However, per capita calorie consumption of the bottom 20 percent declined about 8 percent, from an already low 1,490 calories during 1978/79 to 1,368 calories during 1981/82. It appears that these households were not able to take advantage of the new income-earning opportunities created by the economic reforms during this period. It also appears that the food stamp scheme was not effective in helping the most vulnerable households.

A Laspeyres-type price index constructed from survey data under study showed that prices increased 92 percent during this period. The real value of the nonindexed food stamps, thus, was cut in half. The effect of substitutions made following changes in prices and real income was examined by comparing the relative changes between the unit price of calories and the food price index. Substitutions among calorie sources were able to reduce the food expenditures necessary to obtain the same amount of calories by about 7 percent. The incomes of all groups other than the lowest quintile increased enough to reinforce the substitutions and keep consumption from falling.

The effect of food stamps on calorie consumption was estimated on the assumption that households treat food stamps as just another source of income. This assumption was confirmed by a statistical test of the underlying hypothesis. The additional income received through food stamps enabled the lowest quintile to increase calorie consumption 12 percent. The next quintile increased its consumption 6 percent. As expenditures increased, the impact of food stamps on total calories declined significantly because expenditure elasticities were lower and the cost of calories was higher. These relationships and the large share of food stamp outlay "leaked" to upper-income households reduced the cost-effectiveness of the income transfer. Assuming that the primary objective of the food stamp scheme was to improve the nutrition of the households in the lowest quintile, the cost to the Treasury of providing a given amount of calories to these households was 250 percent of the cost incurred by them.

The estimated impact of the food stamps on the nutritional welfare of preschool children revealed that the benefits they receive depend on intrahousehold food allocation practices. A special survey of 480 households showed that food stamp incomes increased the calorie consumption of preschool-aged children in the lowest quintile by 5.4 percent, but they increased the consumption of all other members in the same households nearly 10 percent. However, consumption by children appeared to increase significantly after the more productive members in the household received about 80 percent of the recommended calorie allowance. It appears that income transfers have to be large to ensure an effect on preschool children. The results imply that other child-related intervention programs, including health services and supplementary feeding programs, like the Triposha program, can be an important complement to income transfers.

Evidence makes it clear that a modification of the present food stamp scheme is required if low-income households are to be effectively assisted. The program needs to have a clear objective, such as ensuring a given amount of calorie consumption. To ensure the recommended per capita calorie allowance of 2,200 calories, about a fourfold increase in the subsidy bill would have been necessary during 1981/82. If the given allocation of Rs 1.7 billion was transferred only to households in the bottom quintile, their per capita calorie consumption may have increased to about 1,540 calories—about 70 percent of the recommended allowance. The real problem is to find a proper targeting mechanism. The traditional targeting mechanisms, such as ones based on child malnutrition, regional targeting, or subsidizing "inferior" foods that are self-targeting, have many problems in Sri Lanka. Widespread participation by the people in the democratic process of representative government, a multiparty political system, relatively high literacy rates, and a comprehensive and competent public administrative structure are conducive to devising a targeting scheme in which the administrators and the community together can be effective in screening applications for the income transfer. In a broader perspective, the constraints to effective participation in the present development process by the vulnerable sections must be properly identified and remedial strategies adopted so that the dependence on government transfers for nutritional welfare can be minimized.

2

INTRODUCTION: THE POLICY CHANGE

In 1979, a fundamental change occurred in Sri Lanka's food subsidy program: a long-standing food price subsidy scheme was replaced by a direct income transfer program aimed at a target population. This change was prompted by the need to generate domestic savings to facilitate the overall economic development program launched by the new government, which came into power after a landslide electoral victory in 1977. The new economic reforms were to liberalize the economy from government intervention and give the market a larger role in the determination of the output and input prices and allocation of resources.[1]

The purpose of this study is to examine the costs and benefits of the change in subsidy programs and to examine alternative policies that could increase the effectiveness of the food stamp scheme in protecting the vulnerable groups. For nearly four decades, Sri Lanka had a comprehensive food subsidy scheme. Eligibility was almost universal. Rice, the staple food of the entire population, and other major commodities, including wheat flour, sugar, and powdered milk, were subsidized at some time or another. The amount of the subsidies and the consumer entitlements underwent changes influenced by fiscal and political considerations.

Food subsidies were only a part of the package of welfare policies that has characterized public policy in Sri Lanka. Other elements included free medical and health services, free education from kindergarten through university and provision of highly subsidized public utilities such as public transportation services.[2]

A few salient features in the history of the food subsidy program should be noted.[3] First, notwithstanding some sharp differences in political ideologies, since the country's independence successive national governments continued the food subsidies to attain both political stability and social equity.[4] Second, these subsidies continued, in part, because a remarkably high degree of active political participation by the population, particularly the organized sector of the labor force, provided sufficient pressure to ensure that they did. Third, the success of the subsidy program was linked closely with the country's balance of payments.

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[1] The new government's policies and an agenda of work are given in William Gopallawa, *Statement of Government Policy Made by His Excellency, the President, in the National State Assembly on August 4, 1977* (Colombo: Ministry of Information, 1977). Details of the economic policies and various measures are contained in Ronnie de Mel, *Budget Speech 1978* (Colombo: Ministry of Finance and Planning, 1978). These economic reforms have been described and analyzed by many, including R. Herring, "The Janus-Faced State in a Dependent Society: Sri Lanka's Shifts in Development Strategy," Northwestern University, Evanston, Ill., 1985 (mimeographed); and J. J. Stern, "Liberalization in Sri Lanka: A Preliminary Assessment," Washington, D.C., July 1984 (mimeographed).

[2] Many have pointed to the achievements in the standards of living—life expectancy at 69 years, infant mortality rate at 43 per 1,000, and adult literacy rate at 85 percent—as gains from these public expenditures. See Paul Isenman, "Basic Needs: The Case of Sri Lanka," *World Development* 8 (March 1980): 237-258; and A. K. Sen, "Public Action and Quality of Life in Developing Countries," *Oxford Bulletin of Economics and Statistics* 43 (November 1981): 287-319. Others have argued that the registered gains in living standards are minimal when compared with the living standards that prevailed in Sri Lanka four decades ago. See Surjit Bhalla, "Is Sri Lanka an Exception? A Comparative Study of Living Standards," World Bank, Washington, D.C., July 1984 (mimeographed).

[3] For a discussion of the government role in food production and consumption up to the mid-1970s, see Neville Edirisinghe and Thomas T. Poleman, "Implications of Government Intervention in the Rice Economy of Sri Lanka," International Agriculture Monograph 48, Cornell University, Ithaca, N.Y., January 1976.

[4] Consumption and welfare effects of the ration program are analyzed in James D. Gavan and Indrani Sri Chandrasekera, *The Impact of Public Foodgrain Distribution on Food Consumption and Welfare in Sri Lanka,* Research Report 13 (Washington, D.C.: International Food Policy Research Institute, 1979).

This was because Sri Lanka depended on imports for more than 50 percent of its food supply during most of the period. Lastly, input subsidies to rice farmers and a state-sponsored guaranteed price scheme were intended to minimize the deleterious effects of consumer subsidies on producers.

The food subsidy scheme began as a wartime necessity to ensure that limited supplies were distributed equitably and to protect consumers from postwar inflationary pressures. For more than two decades the program provided a minimum of two pounds of rice per capita per week to the entire population at highly subsidized prices. For a short period in the early 1950s, infants and children received less (see Table 1, which shows all major changes in the rice subsidy scheme between 1948 and 1979). From 1954 to 1966, everyone received four

Table 1—Changes in rice ration allotment and prices of ration and open market rice, 1948-79

Date	Allotment		Ration Price	Open Market Price[a]	
	Paid	Free		Parboiled	Raw
	(pounds/person/week)			(cents/pound)	
1948-July 1952	3.0	0.0	27.0[b]	37.0[b]	37.0[b]
July 1952	2.5	0.0	12.5	44.0	43.0
September 1952	2.0	0.0	12.5	n.a.	n.a.
July 1953	2.5	0.0	35.0	55.5	55.0
October 1953	2.5	0.0	27.5	n.a.	n.a.
November 1954[c]	4.0	0.0	27.5	43.0	43.0
May 1955	4.0	0.0	25.0	39.0	39.0
October 1955	4.0	0.0	12.5	n.a.	n.a.
May 1956	4.0	0.0	20.0	39.0	34.0
June 1958	4.0	0.0	17.5	43.0	40.0
June 1959	4.0	0.0	12.5, 22.5[d]	43.0	41.0
April 1960	4.0	0.0	12.5	42.0	38.5
December 1966	0.0	2.0	0.0	42.5	38.5
September 1970	2.0	2.0	37.5	60.5	59.0
February 1973	2.0	2.0	80.0	135.0	134.0
March 1973	2.0	2.0	70.0	n.a.	n.a.
October 1973[e]	2.0	1.0	100.0	n.a.	n.a.
April 1974	2.0	1.0	115.0	238.0	227.0
August 1974	2.0	1.0	110.0	n.a.	n.a.
November 1975	2.0	1.0	100.0	167.0	163.0
January 1976	1.0[f]	1.0	100.0	153.0	150.0
April 1977	2.0	1.0	100.0	143.0	144.0
May 1977	3.0	1.0	100.0	n.a.	n.a.
February 1978[g]	3.0	1.0	100.0	158.0	160.0
September 1979[h]	. . .	. . .	. . .	. . .	. . .

Sources: James D. Gavan and Indrani Sri Chandrasekera, *The Impact of Public Foodgrain Distribution on Food Consumption and Welfare in Sri Lanka,* Research Report 13 (Washington, D.C.: International Food Policy Research Institute, 1979), p. 28; Neville Edirisinghe and Thomas T. Poleman, "Implications of Government Intervention in the Rice Economy of Sri Lanka," International Agriculture Monograph 48, Cornell University, Ithaca, N.Y., January 1976; and Sri Lanka, Ministry of Plan Implementation, Food and Nutrition Policy Planning Division, "Food and Nutrition Statistics," Colombo 1983, Table 2.8.

[a] These are the average prices in Colombo municipality.

[b] This is the average price in 1950.

[c] From 1952 to this period, infants and children received less, and workers more, than the average adult allotment.

[d] The price of the first 2 pounds was 12.5 cents per pound and the next 2 pounds, 2.5 cents per pound.

[e] Income-taxpayers were excluded from the scheme.

[f] In urban areas of rice-deficit districts, an additional pound was issued.

[g] These are rations issued to families with annual incomes less than Rs 3,600.

[h] Rice and some other foods were made available at unsubsidized prices for purchase using food stamps at authorized shops.

pounds of rice per week. During 1966, the quantities issued under ration were halved but the universal subsidy was unchanged.

After the food subsidy scheme had operated for only four years, the postwar inflationary prices of rice created strains that became clearly visible. An attempt to reduce subsidies led to drastic increases in the administered price of rice and other commodities and services. This first attempt to bring administered prices closer to costs was met with widespread protests spearheaded by organized urban labor. These protests in 1953, locally known as the "Harthal," took the form of civil disobedience culminating in riots and damage to life and property. The food riots led to partial abandonment of the subsidy reforms, the resignation of a prime minister and, a short period later, the change of government. The new political regime restored the original benefits. The lower world prices of rice during the second half of the 1950s helped considerably in bringing about these changes. But the political sensitivity of the subsidy program was clear.

During the early 1960s, acute fiscal and balance-of-payments problems led the finance minister to propose that the subsidy be curtailed. This was squelched by the backbenchers; the minister resigned. In the second half of the 1960s, continued balance-of-payments difficulties and a worldwide rice shortage brought a strategic compromise between economic logic and political feasibility: the rice ration was reduced by half but given free of charge. Food subsidies were a key issue in the general election of 1970, however, and political power changed hands. Some increases in the subsidized ration entitlements were made immediately after the elections. These increases were aided by low world prices of rice.

However, the events during 1973/74 clearly showed that the country's food policy depended heavily on international price movements. Worldwide food shortages and the consequent inflationary pressures on the rice and wheat markets were mainly responsible for a series of changes in the ration program, including the halving of the free allotment during 1973 (Table 1). An attempt was also made to reduce the burden of the subsidy by excluding income taxpayers from the free rice entitlement. However, this measure only eliminated about 1 percent of the subsidy.[5] The most fundamental changes in the scheme aimed at reducing the food subsidy burden were carried out by the government elected in 1977.

Other fundamental policy changes included the devaluation of the Sri Lanka rupee by about 46 percent and adoption of a floating exchange rate to provide a more rational basis for international trade; abolition of exchange controls and quantitative restrictions aimed at liberalizing trade (however, a tariff system was introduced to maintain some control); adoption of measures to encourage foreign investments; removal of domestic price controls, except for those on a few "essential" goods; a shift of emphasis in government intervention in the rice market to ensure floor prices, which were substantially increased to provide incentives to producers, and to liberalize trade in input markets to provide a flow of input requirements for agricultural production; changes in domestic interest rates to encourage savings; and the launching of a substantial public investment program dominated by three "lead" projects—the accelerated Mahaweli program, public housing, and urban development program—largely financed by foreign aid.[6]

Two of the main objectives of the new government were to liberalize the trading system, and to raise domestic savings.[7] It should not be surprising that these objectives affected the food subsidy and rationing program directly. Although consumer food subsidies would have significantly raised the quality of life, especially for those at greatest nutritional risk, the costs of providing subsidized food to almost the entire population were high. The net costs of the food subsidies in some years reached 17 percent of the government expenditures and 6 percent of the GNP. By early 1978 the new policies had resulted in a substantial devaluation of the currency, which led to a massive increase in the total food subsidy. The effects of the devaluation may have provided an additional incentive for curtailing the food subsidy.

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[5] Janice Jiggins, "Dismantling Welfarism in Sri Lanka," *ODI Review*, No. 2, 1976, p. 97.

[6] See de Mel, *Budget Speech 1978* and Central Bank of Ceylon, *Review of the Economy 1977* (Colombo: Central Bank of Ceylon, 1978).

[7] de Mel, *Budget Speech 1978*.

The reductions in the food subsidy burden were strategically phased to minimize adverse reactions to changes in a program that had existed for over 40 years. They were made in three steps carried out over two years. The first step was a means test conducted in January 1978. It was used to restrict subsidized rice to families whose monthly incomes were less than Rs 300, and resulted in the restriction of rice rations to 7.6 million persons, or nearly 50 percent of the population. There was no change in the quantity of the free ration (one pound of rice per person per week) or in the amount that could be purchased at a subsidized price (three pounds of rice). The procedure of the means test, which was conducted on self-reported incomes of the households, as well as the difficulties in checking on incomes, may have been conducive to underreporting.

The second phase was the change from ration shops to food stamps in September 1979. After much publicity, households were required to apply for food stamps through a declaration of incomes and household composition.[8]

Under the food stamp scheme, households with an income of less than Rs 3,600 per year, with marginal adjustments for larger families, would be issued food stamps (Appendix 1, Table 42). For each child less than 8 years old they would receive stamps worth Rs 25 per month. For each child between 8 and 12, they would receive stamps worth Rs 20 per month. The household would receive stamps worth Rs 15 per month for each member older than 12. The food stamps could be used to purchase a basket of commodities composed of rice, wheat flour, bread, sugar, dried fish, milk, food, and pulses. The prices of these commodities would be specified at unsubsidized levels. Food stamps would be renewed every three months. This would ensure a continuous revision of those eligible. To meet rising fuel costs, kerosene stamps valued at Rs 9.50 per month would be issued to each household eligible for food stamps. These could be used to buy specified food items, but food stamps could not be used to buy kerosene. Households would be attached to cooperative societies or authorized distributors to obtain their food stamp commodities. Unused food stamps could be deposited in the Post Office Savings Bank.

Although large reductions in coverage were expected from the change to food stamps, the number of recipients remained virtually the same as in the curtailed ration scheme. In fact, the number of recipients increased with each issue of stamps (every three months). This led to a freeze on new issues in March 1980. The most striking characteristic of the new food stamp scheme was the allocation of a fixed nominal amount of approximately Rs 1.8 billion in the annual budget for the cost of food and kerosene stamps. In other words, no provision was made to change the value of the food stamps to maintain their real value.

The third phase in the food subsidy reforms was the elimination of subsidies on food prices. Under the rationing scheme, and during the first phase of the new scheme, price subsidies remained on rice, flour, sugar, and infant milk foods. These subsidies amounted to Rs 2,326 million in 1979. Prices of rice, flour, and sugar were raised in 1980 to reflect costs, and the total subsidy was reduced to Rs 305 million. By the end of 1982, these subsidies were almost totally eliminated.

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[8] Sri Lanka, Department of the Food Commissioner, "Administration Report of the Food Commissioner, 1979-1981," Colombo, 1983, (mimeographed).

3

PRICE SUBSIDY AND FOOD STAMP BENEFITS

The comparison of the benefits of the two schemes that follows is largely focused on the rice ration recipients and food stamp recipients. Benefits from the price subsidies will be estimated using data from the Consumer Finances and Socioeconomic Survey 1978/79 (CFS 1978/79), conducted by the Central Bank of Ceylon. Benefits from food stamps will be estimated using data from the Consumer Finances and Socioeconomic Survey conducted during 1981/82 (CFS 1981/82) by the same institution (see Appendixes 1 and 2).

Price Subsidy Benefits

The average per capita values of the income transfers received through the price subsidies on rice, wheat flour, bread, and sugar by the households in different expenditure classes are shown in Table 2.[9] The overall per capita value of the price subsidies received during 1978/79 by all households is estimated to be Rs 15.00 per month. The rice subsidy constitutes 51 percent of this mean value. For rice ration recipients, the rice subsidy constitutes 71 percent of the average per capita total subsidy of Rs 21.46. Those not entitled to rice rations received a per capita subsidy of Rs 8.84, the bulk of which came from the wheat and bread price subsidies.

Per capita subsidy receipts by different expenditure classes show that subsidy benefits have increased with expenditures for both categories of households. Those households in the fifth expenditure quintile, the richest, received the highest per capita subsidy benefits overall, with a per capita value of Rs 26.22 received by rice ration recipients. The estimated value for the lowest quintile is Rs 18.92. The subsidies received by the households in upper expenditure classes are larger because they can purchase a larger proportion of the paid ration entitlement, and more wheat and wheat products. (Rice ration recipients were eligible to purchase 1.5 pounds of rice at a subsidized price, over and above the 1 pound of free rice entitlement.) In addition, the upper income households also received higher benefits per capita from the sugar subsidy.

Two important characteristics emerge from this picture of per capita subsidy benefits. First, rice subsidies were expected to be limited to low-income households but instead were received by households throughout the expenditure range. Second, the largest per capita benefits from universal price subsidies on wheat, bread, and sugar were received by the upper income classes.

The sectoral receipts of per capita price subsidies are shown in Table 3. For the recipients of rice rations, the per capita rice subsidy constituted 66 percent in the urban sector, 74 percent in the rural, and 54 percent in the estate.[10] The wheat subsidy is most important in the estate sector, arising out of the high per capita wheat consump-

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[9] The expenditure classes employed throughout this study are classified by putting the per capita total household expenditures in an ascending order and then dividing into 5 classes (quintiles) or 10 classes (deciles). The first quintile or decile thus represents the lowest expenditure class.

[10] The urban sector consists of households in the municipal, urban, and town council areas. The estate sector consists of households in tea, rubber, and coconut plantations with 20 or more acres and with 10 or more resident workers. All other households are included in the rural sector. About 72 percent of the total population live in the rural sector, with 20 percent in the urban sector and 8 percent in the estate sector. See Central Bank of Ceylon, *Report on Consumer Finances and Socioeconomic Survey 1978/79* (Colombo: Central Bank of Ceylon, 1980); and Central Bank of Ceylon, *Report on Consumer Finances and Socioeconomic Survey 1981/82* (Colombo: Central Bank of Ceylon, 1984).

Table 2—Food subsidies by commodity group and expenditure quintile, 1978/79

Per Capita Expenditure Quintile	Commodity	Per Capita Value of Subsidy		
		Recipients[a]	Others	All
			(Rs/month)	
1	Rice	13.90	...	11.11
	Wheat and bread	4.21	6.82	4.31
	Sugar	0.81	0.40	0.72
	All	18.92	7.22	16.21
2	Rice	15.46	...	10.00
	Wheat and bread	4.97	7.49	5.57
	Sugar	0.88	0.56	0.76
	All	21.31	8.05	16.33
3	Rice	15.77	...	7.90
	Wheat and bread	5.69	8.30	6.74
	Sugar	0.97	0.66	0.81
	All	22.43	8.96	15.45
4	Rice	16.27	...	6.40
	Wheat and bread	6.11	8.26	7.23
	Sugar	1.02	0.84	0.91
	All	23.40	9.10	14.54
5	Rice	17.91	...	3.35
	Wheat and bread	7.06	8.21	7.83
	Sugar	1.25	1.20	1.21
	All	26.22	9.41	12.39
All	Rice	15.34	...	7.76
	Wheat and bread	5.20	8.00	6.36
	Sugar	0.92	0.84	0.88
	All	21.46	8.84	15.00

Source: Based on Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape).
Note: The 1st quintile had the smallest expenditures; the 5th had the largest.
[a] Rice ration recipients only.

Table 3—Food subsidies by commodity group and sector, 1978/79

Sector	Commodity	Per Capita Value of Subsidy		
		Recipients[a]	Others	All
			(Rs/month)	
Urban	Rice	13.71	...	5.64
	Wheat and bread	6.14	7.75	6.94
	Sugar	0.95	1.04	1.00
	All	20.80	8.79	13.54
Rural	Rice	15.76	...	9.14
	Wheat and bread	4.67	6.16	5.00
	Sugar	0.93	0.85	0.89
	All	21.36	7.01	15.03
Estate	Rice	14.32	...	2.92
	Wheat and bread	11.53	15.44	14.55
	Sugar	0.68	0.47	0.51
	All	26.53	15.91	17.98

Source: Based on Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape).
[a] Rice ration recipients only.

tion in this sector. Data revealed that bread consumption is low in this sector, making up only 10 percent of the total wheat and bread subsidy. The opposite is true in the urban sector: bread makes up 83 percent of the wheat and bread subsidy. In the rural sector, bread and wheat flour subsidies have almost equal shares. For all households in the estate sector, wheat and bread subsidies provide nearly 80 percent of all price subsidies. These two commodities make a 51 percent contribution in the urban sector, and a 33 percent contribution in the rural sector. Food preferences clearly show that a removal of subsidies on wheat would have the largest effect in the estate sector.

Food Stamp Benefits

Food stamp income transfers are not made on a per capita basis. Eligibility is based on household income, household size, and composition. Although food stamps are issued to the individual members of a family, the household probably treats all food stamps and kerosene stamps issued to it as general household income; hence the justification for evaluating food stamps on a per capita basis. Table 4 shows the mean values of food and kerosene stamp benefits received per person as well as by the whole household (see Appendix 3).

The per capita value of food and kerosene stamps is estimated to be approximately Rs 18 per month for stamp recipients. The mean value of stamps per receiving household is about Rs 95 per month. The poorest 40 percent of the households receive higher values of food stamps, with the highest value per household, Rs 115, received by the bottom 20 percent. Yet, the highest per capita values are not received by this quintile. This discrepancy may have been brought about by the eligibility criteria that discriminate against large households (discussed later in this chapter).

The nominal value of the food stamps allocated to different recipient categories has not changed since the food stamp program was introduced, although in 1984 the value of the kerosene stamps issued to a household increased from Rs 11.50 to Rs 22.00. Thus the purchasing power of the food stamp income has declined with each increment in the prices of goods and services that the recipient households used to purchase in 1978/79. The values of the food stamps received in 1981/82 in terms of the 1978/79 price structure are shown in Table 4. In general, the real value of food stamps had been almost halved by 1981/82. However, a loss of real value relative to a bundle of goods and prices of a base year does not necessarily mean that welfare has eroded to an equal extent. Increases in over-

Table 4—Food stamp receipts by expenditure quintile, 1981/82

Per Capita Expenditure Quintile	Food Stamps Per Capita	Household Size	Food Stamps Per Household	Real Value of Stamps[a]	
				Per Capita	Household
	(Rs/month)		(Rs/month)	(1978/79 Rs/month)	
1	18.43	6.24	115	9.00	56.10
2	18.89	5.39	101	9.35	50.00
3	16.99	4.89	82	8.41	40.60
4	17.00	4.24	72	8.50	36.00
5	17.25	3.67	63	9.32	34.05
All	17.98	5.28	94.93	9.36	49.44

Source: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Notes: Food stamps include kerosene stamps. The 1st quintile had the smallest expenditures; the 5th had the largest.

[a] The deflators are discussed in Chapter 7.

all household incomes and substitutions among goods and services are countervailing forces that may help maintain welfare.

Table 5 relates the value of the food stamps to the total price subsidies and rice ration subsidies received during 1978/79. It appears that even at the beginning of the food stamp program, the overall income transfer was about 17 percent less than the transfers given through price subsidies. By 1981/82, the real value of the transfer had fallen to only 43 percent of the total subsidy transfer given to ration recipients.

Subsidies Relative to Household Expenditures

The contribution of the food subsidies to household total expenditures during 1978/79 and 1981/82 is shown by sector and expenditure class in Table 6. Compared with food stamp recipients during 1981/82, rice ration recipients during 1978/79 were clearly better off, having received about 18 percent of their average household budget from price subsidies on rice and other foods. The contribution of the subsidy to the average household expenditures of food stamp recipients was almost halved after the changeover to food stamps. Even the households not eligible to receive rice rations in 1978/79 received nearly 5 percent of their average consumption expenditures through the generalized food price subsidies. When looked at by sector, the reductions in the contribution of food subsidies to household expenditures generally follow the pattern for the whole economy, with the worst negative effects seen in the estate sector. The smaller proportion of food stamp recipients in this sector and the removal of price subsidies on other foods, particularly on wheat flour, drastically reduced the importance of government assistance in the total consumption by these households.

Households in the bottom quintile have been the highest beneficiaries under both programs. They had the smallest reduction in the contribution of the subsidies to total expenditures after the program change, a reduction of 38 percent—from 24.5 percent of total expenditures to 15 percent—whereas households in the second quintile and others suffered reductions of more than 50 percent.

Finally, the importance of the price subsidies under these two programs in the expenditures of households grouped by

Table 5—Value of food stamps as a share of the general food subsidy and of the rice ration subsidy received during 1978/79, by expenditure quintile

Per Capita Expenditure Quintile	Food Stamps as a Share of the General Food Subsidy[a]		Food Stamps as a Share of the Rice Ration Subsidy	
	At Inception[b]	During 1981/82	At Inception[b]	During 1981/82
		(percent)		
1	0.97	0.47	1.32	0.65
2	0.88	0.43	1.22	0.60
3	0.75	0.37	1.07	0.53
4	0.72	0.36	1.04	0.52
5	0.65	0.35	0.96	0.52
All	0.83	0.43	1.17	0.61

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

[a] The general food subsidy includes the value of rice ration subsidy and the food price subsidies received by rice ration recipients.

[b] The food stamp scheme was introduced in September 1979.

Table 6—Subsidies as a share of total expenditures by sector and expenditure quintile, 1978/79 and 1981/82

Sector/Group	Year	Per Capita Expenditure Quintile					
		1	2	3	4	5	All
Urban							
Rice ration recipients	1978/79	26.18	17.74	14.14	11.07	7.73	17.76
Rice ration nonrecipients	1978/79	7.92	5.82	4.78	4.17	2.38	3.82
Food stamp recipients	1981/82	13.27	8.80	6.17	5.00	3.03	8.21
Rural							
Rice ration recipients	1978/79	24.18	18.57	14.97	11.61	8.92	17.99
Rice ration nonrecipients	1978/79	6.27	4.79	4.07	3.23	2.02	3.54
Food stamp recipients	1981/82	15.41	9.67	6.66	4.96	3.34	9.92
Estate							
Rice ration recipients	1978/79	25.92	20.50	18.68	16.71	9.20	19.22
Rice ration nonrecipients	1978/79	11.15	10.25	9.99	8.88	6.57	9.12
Food stamp recipients	1981/82	10.17	7.86	4.82	4.53	2.67	7.14
All							
Rice ration recipients	1978/79	24.58	18.53	14.98	11.80	8.67	17.99
Rice ration nonrecipients	1978/79	7.17	6.20	5.55	4.36	2.61	4.50
Food stamp recipients	1981/82	15.09	9.55	6.56	4.96	3.27	9.66

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

occupation is indicated in Table 7. The contribution of the subsidies, received through price subsidies as well as food stamps, was most important for labor groups, who make up most of the low-income households. The real income losses after the changeover to the food stamp scheme may have been largest among these households. Whether these losses have been offset by increased household incomes will be examined below.

Table 7—Share of subsidy in the total household budget, by occupational group and expenditure quintile, 1978/79 and 1981/82[a]

Occupational Group	Quintile 1		Quintile 2		Quintile 3		Quintile 4		Quintile 5	
	1978/79	1981/82	1978/79	1981/82	1978/79	1981/82	1978/79	1981/82	1978/79	1981/82
Professional	18.7	16.7	16.5	8.4	11.4	5.4	10.0	4.6	9.5	2.6
Clerical	23.0	7.5	14.7	7.8	11.3	4.6	9.1	3.3	6.6	2.5
Sales	25.2	13.1	17.6	8.6	15.4	6.6	11.3	5.1	7.6	3.2
Service	25.0	15.3	17.3	9.6	14.0	6.8	11.8	5.0	9.4	3.5
General farmers	22.8	14.4	17.8	9.9	15.0	6.9	10.9	4.9	8.6	3.4
Estate labor	25.2	14.5	19.8	9.3	16.7	5.9	15.3	5.2	8.9	3.3
Agricultural labor	24.2	16.1	19.7	10.0	16.3	6.7	12.1	4.9	10.3	3.6
Miscellaneous agricultural labor	23.2	16.5	18.6	9.1	15.2	6.7	12.2	5.1	9.3	3.6
Production	25.4	13.9	18.7	9.2	14.7	6.3	11.6	4.9	8.4	3.0
Miscellaneous labor	24.6	14.5	19.7	9.1	14.6	6.7	13.2	4.9	8.5	3.2
Miscellaneous	25.7	19.7	18.5	14.4	15.3	7.2	11.9	5.5	8.8	3.7

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Notes: The quintiles are all households grouped by their per capita expenditures. The 1st quintile had the smallest; the 5th had the largest.

[a] Data related to 1978/79 are for rice ration recipients only.

4

THE BENEFICIARIES

To what degree were the intentions to limit the benefits to "weaker sections" achieved? Identification of "leakages" to unintended beneficiaries can help determine the cost-effectiveness of the transfer program. It can also help show how the program can be modified.

Frequency of Recipients in Different Strata

Table 8 shows the percentage of households receiving food stamps in 1981/82 and the percentage receiving price subsidy benefits during 1978/79 by expenditure quintile. The change from the general food subsidy to the food stamp scheme reduced the number of households receiving food-related government transfers by about half. Although rice rations were limited to half the population in 1978, price subsidies on a few other major food items allowed almost all households to receive some elements of the overall food subsidy. It was only when these price subsidies were eliminated (by mid-1980) that only half of all households became "targeted." But comparison of the incidence of food stamps recipients with that of the targeted rice ration recipients shows virtually no difference between the two programs.

Administratively, eligibility for food stamps has been based on household income rather than expenditures. If households are classified by income, the estimates are completely consistent with estimates using a classification of households by expenditures (Table 9). The picture remains the same even when the households are classified by their total income (Table 10).

Table 11 shows the proportion of households receiving food stamps and rice ration recipients in the urban, rural, and estate sectors and in the five geographical zones defined by the Central Bank.[11] It appears that the revalidation of food stamps shifted the proportions within sectors and geographical zones. Rural households also appear to be affected least by the shift from the rice rationing scheme to the food stamp scheme. The percentages in the urban and estate sectors decreased from 41 and 21 percent under the rationing scheme to 32 and 13 percent under the food stamp scheme. Although the absolute decline is about 8 percentage points in both sectors, the relative decline in the estate sector is twice that of the urban sector. Estate sector income is concentrated among the organized labor working in the tea, rubber, and coconut plantations. Their wage payments are highly identifiable and are usually received by more than one member of a household.[12]

The rural sector had the highest proportion of households receiving stamps or rations—58 percent in both periods. This may be attributed to the difficulty of assessing rural incomes, which are mostly agriculture-related and seasonal, in monetary terms. The incidence may also have been high because average incomes in the rural sector were lower than in the urban sector and the average number of income earners per household was lower than in either the urban or the estate sector. Average urban

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[11] The administrative districts falling under each zone are as follows: In Zone 1, Colombo (except Municipality Area), Gampaha, Kalutara, Galle, and Matara. In Zone 2, Hambantota, Monaragala, Ampara, Polonnaruwa, Anuradhapura, and Puttalam. In Zone 3, Jaffna, Mannar, Vavuniya, Trincomalee, and Batticaloa. In Zone 4, Kandy, Matale, Nuware-Eliya, Badulla, Ratnapura, Kegalle, and Kurunegala. And in Zone 5, Colombo municipality.

[12] The average number of income earners in a household in the urban, rural, and estate sectors during 1981/82 was 1.64, 1.45, and 2.46, respectively (Central Bank of Ceylon, *Report on Consumer Finances and Socioeconomic Survey 1981/82*).

Table 8—Percent of households receiving food stamps, 1981/82, and general food subsidy and rice ration subsidy, 1978/79, by expenditure quintile

Per Capita Expenditure Quintile	1981/82	1978/79	
	Households Receiving Food Stamps	Households Receiving General Food Subsidy	Households Receiving Rice Ration Subsidy
		(percent)	
1	79.6	100	80.8
2	65.8	100	65.3
3	50.7	100	50.3
4	36.7	100	39.6
5	15.0	100	18.5
All	49.6	100	50.9

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

incomes are higher, more regular, and easier to assess than rural.[13]

The rural bias of the food stamp scheme can also be seen in the distribution of the incidence of government transfer by zone (Table 11). The administrative districts grouped together in the zones are more or less economically homogeneous.[14] The highest proportion of households receiving food stamps and the largest increase over the proportion of those receiving rationed rice are seen in zones 2 and 3. These two zones contain administrative districts where farming related to domestic agriculture is predominant. In other zones, the revalidation process appears to have reduced the proportion of households receiving government transfers. Zone 4, in which most of the estate sector is located, has fewer food stamp recipients than it had rice ration recipients. A larger decrease is seen in zone 1, which contains more commercialized districts from the western and southern coastal line. Zone 5 contains the Colombo municipality, the most urbanized area in the country. The decline in the incidence of government transfers in this zone is in line with the decline in the urban sector as a whole.

These patterns of food subsidy distribution also hold for an ethnic classification of the households. According to CFS 1981/82, the Sinhalese, Sri Lankan Tamils, Indian Tamils, and all other minority groups constitute 74.6, 11.4, 6.9, and 6.9 percent of the total number of households surveyed. According to Table 12, the proportion of households receiving food subsidies is virtually the same among all communities and income classes, except for the Indian Tamils, who make up most of the estate sector households.

The distribution pattern of transfers among expenditure quintiles for the whole country changes little when the quintiles are broken down by sector and zone. The incidence is consistently higher in the rural sector across the entire expenditure range. Zones 2 and 3 have both the highest number of households receiving transfers across dif-

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[13] Ibid., p. 192. The median income in the urban sector was Rs977 in 1978/79 compared with Rs781 in the rural sector and Rs376 in the estate sector.

[14] Central Bank of Ceylon, *Report on Consumer Finances and Socioeconomic Survey 1981/82.*

Table 9—Share of households receiving food stamps and the value of food stamps received, by per capita income quintile, 1981/82

Per Capita Income Quintile	Per Capita Income All	Per Capita Income Recipient Households	Share of Households Receiving Food Stamps	Value of Food Stamps Per Capita[a]	Number of Recipients in Household	Total Value of Food Stamps[a]
	(Rs/month)		(percent)	(Rs/month)		(Rs/month)
1	113	112	75.60	18.59	6.11	113.58
2	174	173	63.53	18.13	5.40	97.90
3	233	232	56.78	17.67	5.00	88.35
4	328	322	37.46	17.26	4.37	75.42
5	802	598	14.53	17.14	3.87	66.33
All	330	216	49.58	17.97	5.28	94.88

Source: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest income; the 5th had the largest.

[a] This is calculated for those receiving food stamps alone.

ferent expenditure quintiles and the highest proportion of the poorest households receiving transfers.

It is also instructive to examine the transfer recipients by occupational group. The occupational categories in Table 13 are based on the main occupation declared by the head of household. Since there may be other income earners, the total income earned by a household may not reflect the earnings of its head. The 11 groups shown in Table 13 are comparable between the two data sets.

Agricultural labor households and miscellaneous labor households have the highest proportion receiving food stamps, about 80 percent. Their participation in the food stamp program was larger than in the rice ration program. These households make up about 14 percent of all households and about 26 percent of the households in the lowest expenditure quintile. The next highest participation rate is for households in the miscellaneous labor category, which contains about 5 percent of all households. The participation rates of these labor categories show that the food stamp scheme has been quite effective in covering some of the most vulnerable households. A high proportion (56 percent) of paddy cultivators

Table 10—Share of households receiving food stamps and the value of food stamps received, by total household income quintile, 1981/82

Total Household Income Quintile	Total Income All	Total Income Recipient Households	Share of Households Receiving Food Stamps	Total Value of Food Stamps	Number of Recipients in Household
	(Rs/month)		(percent)	(Rs/month)	
1	501	494	72.98	73.17	3.84
2	827	825	61.95	91.72	5.08
3	1,130	1,121	55.05	102.22	5.87
4	1,624	1,600	42.09	107.68	6.47
5	4,160	3,059	15.81	107.02	7.54
All	1,648	1,067	49.58	94.90	5.28

Source: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

Table 11—Share of households receiving food stamps, 1981/82, and rice rations, 1978/79, by sector, zone, and expenditure quintile

Sector or Zone Stamps or Rations	Per Capita Expenditure Quintile 1	2	3	4	5	All
			(percent)			
Urban						
Stamps	69.2	54.9	43.6	30.1	8.1	32.5
Rations	77.6	60.7	45.5	36.8	11.9	41.0
Rural						
Stamps	82.5	72.5	57.7	42.2	19.4	57.2
Rations	83.3	72.0	58.2	44.1	24.1	58.6
Estate						
Stamps	43.6	15.2	8.9	8.0	6.8	13.2
Rations	44.6	28.6	14.9	19.1	10.5	21.0
Zone 1						
Stamps	76.1	63.0	53.4	33.7	12.1	43.6
Rations	84.4	67.2	53.0	42.8	17.3	52.0
Zone 2						
Stamps	85.7	71.1	62.5	48.9	19.1	60.5
Rations	72.9	63.1	42.3	37.4	18.6	48.2
Zone 3						
Stamps	84.5	77.8	61.1	46.9	24.7	58.0
Rations	77.9	66.2	60.5	44.9	27.2	52.3
Zone 4						
Stamps	78.5	63.5	41.8	31.4	14.7	49.2
Rations	81.9	65.6	47.8	36.9	19.4	52.6
Zone 5						
Stamps	58.8	33.3	29.7	24.4	8.9	24.6
Rations	59.0	46.7	48.8	25.6	8.9	29.7

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The zones are economically homogeneous groupings of administrative districts. Zone 1 is made up of more commercialized districts on the western and southern coasts. Zones 2 and 3 contain districts dominated by agriculture. Most of the estate sector is in Zone 4. The most urbanized part of the country, Colombo municipality, is Zone 5. The 1st quintile had the smallest expenditure; the 5th had the largest.

and other farmers, including livestock farmers, fishermen, and hunters, also receive the government income transfers.

Forty-one percent of the estate labor households in tea, rubber, and coconut plantations receive food stamps. The participation rate for estate labor households in the lowest expenditure quintile is 74 percent. These rates were almost the same under the rice rationing scheme. Next to professionals, the lowest incidence is seen among the clerical workers, most of whom are employed in the public sector. Their incomes can be determined readily.

Professionals, clerical workers, sales workers, farmers, and production workers each account for more than 10 percent of the households in the highest expenditure quintile. The participation rates of these households in the food stamp scheme range from 5 percent for professionals to 20 percent for general farmers.

Shares of Total Outlay

The shares of total government outlays on food and kerosene stamps received by the households in different expenditure classes and sectors during 1981/82 are presented in Table 14. The two lowest expenditure quintiles received about two-thirds

Table 12—Share of households receiving food stamps, 1981/82, and rice rations, 1978/79, by ethnic group and expenditure quintile

Per Capita Expenditure Quintile	Sinhalese		Sri Lankan Tamils		Indian Tamils		All Other	
	Stamps	Rations	Stamps	Rations	Stamps	Rations	Stamps	Rations
				(percent)				
1	82.0	84.4	79.0	77.0	55.3	44.4	77.6	68.4
2	69.4	69.2	71.5	72.8	28.2	34.0	63.0	59.3
3	54.5	54.4	58.0	62.8	12.1	17.4	52.4	48.8
4	38.3	42.5	46.3	46.7	9.5	18.2	35.1	30.4
5	15.1	18.1	19.9	22.3	7.8	14.1	9.1	20.1
All	52.1	54.2	52.3	52.2	20.0	23.1	46.6	46.9

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

of the total outlay, with the lowest quintile receiving 38 percent. If the intended target group was the bottom 20 percent of the population, these figures indicate that over 60 percent of the food stamp budget is being received by "unintended" beneficiaries. Even if the target range is broadened to include the households in the lower 40 percent of the expenditure range, this indicates a leakage of a third of the total outlay.

As shown in Table 15, under general price subsidies and rice rationing, the poorest 40 percent received only 50 percent of the total food subsidies made on rice, sugar, and wheat flour. The lowest quintile received only 25 percent. Because of leakages in the rice rationing scheme and the universal price subsidies on other basic food commodities, households in the highest three quintiles enjoyed nearly half of the food subsidy. With the elimination of general price subsidies and introduction of the food stamp scheme, the leakage was reduced from one-half to one-third but still appears to be substantial.

The shifts in the shares of the total subsidy allocations harmed the estate sector the most (Tables 14 and 15). The decline in the subsidy share from 10.1 percent of the total food subsidy in 1978/79 to 1.1 percent during 1981/82 resulted from the combined effect of elimination of price subsidies, particularly those on wheat, and the removal of a large number of estate sector households from the food stamp scheme. Better scrutiny of applications for food stamps in the urban areas and the removal of general price subsidies are reasons why the urban sector share also declined from 20.8 percent to 11.8 percent during the two periods. However, this is only a 43 percent reduction compared with the reduction of almost 90 percent experienced by the estate sector. The reduced shares of these two sectors raised the share of subsidies going to the rural sector substantially.

Who are the Intended Beneficiaries?

The intended beneficiaries, according to the regulations governing the food stamp scheme, were households with monthly total incomes of Rs 300 or less in 1979, based on a five-member family. The income cut-off point in the targeted rice rationing scheme was the same. The basis for this income cut-off level is not given explicitly. However, considering that the average cost of 100 calories in 1969/70 was about 4 cents, and the cost of living (food) index increased about 80 percent between 1969 and 1978, it may have been perceived that

Table 13—Share of occupational groups and expenditure quintiles receiving food stamps, 1981/82, and rice subsidies, 1978/79

Occupation	1981/82 Food Stamps Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	All	1978/79 Rice Subsidy
				(percent)			
Professional							
Share receiving	56	40	22	17	5	15	13.0
Share in quintile	1.5	3.0	5.5	9.1	20.3	7.9	6.7
Clerical							
Share receiving	44	29	20	16	6	14	14.4
Share in quintile	1.0	2.4	5.1	7.4	11.8	5.5	4.4
Sales							
Share receiving	71	65	52	35	13	42	50.4
Share in quintile	6.2	7.4	9.2	10.2	13.1	9.2	10.0
Service							
Share receiving	63	48	35	29	22	38	45.3
Share in quintile	4.0	4.8	5.1	5.5	6.1	5.1	5.0
General farmers							
Share receiving	79	73	64	44	20	56	56.7
Share in quintile	15.1	18.7	17.8	19.1	15.3	17.2	19.2
Estate labor							
Share receiving	74	45	28	24	13	41	41.4
Share in quintile	12.7	14.0	13.7	10.4	4.5	11.1	12.8
Agricultural labor							
Share receiving	92	86	76	67	18	82	74.5
Share in quintile	8.2	6.2	3.8	2.7	0.7	4.3	6.7
Miscellaneous agricultural labor							
Share receiving	88	81	74	66	54	79	73.5
Share in quintile	17.6	10.5	9.3	6.6	2.8	9.4	3.3
Production							
Share receiving	81	70	55	39	17	55	59.7
Share in quintile	20.8	23.4	21.2	19.3	15.5	20.1	19.8
Miscellaneous labor							
Share receiving	76	68	50	40	33	61	63.8
Share in quintile	8.4	5.4	4.1	3.3	1.5	4.5	5.0
Miscellaneous							
Share receiving	83	64	60	44	21	49	49.8
Share in quintile	4.4	4.2	5.2	6.4	8.4	5.7	7.1
All							
Share receiving	79.6	65.8	50.7	36.7	15.0	49.6	50.9
Share in quintile	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

an average family of five required Rs 300 per month to meet the per capita calorie allowance of 2,200 calories per day.[15] The additional income transfers may have been intended to ensure such amounts of food expenditures.

Table 16 makes it clear that the intended beneficiaries, according to the income criteria adopted, cannot be in any quintile of the household income distribution but the lowest.[16] The average per household monthly income of the lowest

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[15] From Gavan and Chandrasekera, *The Impact of Public Foodgrain Distribution*, Table 18; and Central Bank of Ceylon, *Annual Report 1982* (Colombo: Central Bank of Ceylon, 1983).

[16] This assumes that at least 25 percent of the households in the second quintile may have household incomes less than Rs 300.

Table 14—Distribution of food stamp payments by expenditure quintile and sector, 1981/82

Per Capita Expenditure Quintiles	Urban Sector	Rural Sector	Estate Sector	All
		(percent)		
1	3.8	34.2	0.47	38.4
2	2.8	25.4	0.28	28.4
3	2.3	15.3	0.20	17.8
4	2.0	8.9	0.16	11.1
5	0.9	3.2	0.03	4.1
Total	11.8	87.1	1.14	100.0

Source: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

Table 15—Distribution of the total subsidy, by expenditure quintile and sector, 1978/79

Per Capita Expenditure Quintiles	Urban Sector	Rural Sector	Estate Sector	All
		(percent)		
1	5.2	19.7	0.8	25.7
2	3.9	17.7	2.3	23.9
3	3.3	14.0	2.9	20.2
4	3.7	10.9	2.6	17.2
5	4.7	6.8	1.5	13.0
Total	20.8	69.1	10.1	100.0

Source: Based on Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

quintile during 1978/79 was Rs 303. On the other hand, it is not until household income entered the third quintile that the expected per capita average calorie consumption of 2,200 calories was achieved by the households (see Chapter 6). Interestingly, even during 1969/70, the per capita calorie consumption of nearly 36 percent of the population was less than 2,200 calories.[17] Under these circumstances, one may assume, the target group would be the households in the lowest quintile, based on the stipulated household income criterion. The calorie consumption criterion would allow the bottom 40 percent of the households to be included in the target group.

Data presented in Tables 8 through 13 clearly show that the attempts to limit government transfers to the most needy have been only partially successful. Although about half the households were recipients of government transfers, given either in the form of rice rations or food stamps, this half is by no means the same as the poorer half of the population. In fact, about 30 percent of the households in the poorer half of the population appear not to have received as much of the transfer benefits as a similar percentage in the upper half of the population appears to have enjoyed. However, the largest percentage of recipients is in the lowest quintile, indicating that a substantial

Table 16—Mean household income by household income quintile, 1978/79

Household Income Quintiles	Average Per Household Income
	(Rs/month)
1	303
2	507
3	696
4	970
5	2,192

Source: Based on Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

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[17] See Gavan and Chandrasekera, *The Impact of Public Foodgrain Distribution*, p. 20.

proportion of the intended beneficiaries received transfers.

There could be many reasons for the failure to get food stamps to some of the poorest segments of the population. The eligibility criteria of the scheme may have eliminated households with incomes just over the income cut-off point but with five or fewer members. For example, a household with an income of Rs 301 and five members would not be eligible for food stamps, whereas a household with an income of Rs 300 and five members would receive stamps (Appendix 1, Table 42). An earlier survey of the food stamp scheme pointed out that in the process of screening, oversights or misunderstandings of income declarations may have caused benefits to be denied to qualified segments of the population.[18] The food stamp scheme has apparently lacked systematic procedures for considering appeals for redress. The same survey also found that a lack of information was not a significant reason for the failure of some apparently eligible households to get food stamps.[19]

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[18] Sri Lanka, Ministry of Plan Implementation, "Survey Report of the Food Stamp Scheme," Colombo, 1981 (mimeographed).

[19] Ibid.

5

THE EFFECT ON FISCAL COSTS AND INCOME DISTRIBUTION

Fiscal Costs

A major objective of the economic reforms of the post-1977 period has been to increase domestic savings. The change from general food price subsidies and quantity rationing to income transfers through food stamps has been successful in reducing the fiscal burden of the food-related welfare policies. This is clearly shown in some of the government accounts shown in Table 17. Broadly, the proportion allocated to food subsidies in total government expenditures was reduced by more than half after the program change. Removal of general price subsidies, targeting, and the allocation of a constant nominal amount for food stamps are major factors in this change.

In earlier years, some foods imported by the government were sold at a profit, which helped reduce the net food subsidy. The negative values for different commodities in Table 17 indicate these profits. This practice is particularly evident in the profits from the sale of sugar, which substantially reduced the net food subsidy during the 1960s. The reduction or absence of these profits in later years, increased costs of imports, and the growth in the size of the population receiving subsidy benefits made food subsidies account for a large share of the government budget. In the mid-1970s, these subsidies accounted for approximately 15 percent of government expenditures and about 5 percent of the gross national product. By 1982, total food subsidies, 95 percent of which were for food and kerosene stamps, had fallen to 5 percent of the total government expenditures and 2 percent of GNP. Changes in the size of the government budget itself also affected these changes in the relative share of the subsidy. Between 1969/70 and 1977, for example, the rate of growth in the size of the nominal government budget was about 13 percent. Between 1977 and 1982, this rate of growth increased to nearly 30 percent.

How big would the fiscal costs have been if the subsidy programs had not changed? The fiscal costs of the food subsidy were simulated under two assumptions for 1979 to 1984; the results are presented in Table 18. The first assumption is that food stamps are not introduced but targeted rice rations and general food price subsidies continue. Under the second assumption, targeted food stamps continue but are linked to an index of rice prices.

Under the first assumption, the total subsidy in 1979 would have been Rs 3,101 million. Assuming that the total subsidy increases, as it has in the past, about 20 percent annually, which is slightly less than the rate of growth of the subsidy between 1966/67 and 1977, the total food subsidy in 1984 would have been Rs 7,714 million. In such circumstances the food subsidy would have amounted to 13-15 percent of total government expenditures, and 5-6 percent of the GNP (Table 18).[20]

Under the second assumption, which is perhaps the more relevant one, the food stamp budget increases annually by 20 percent to reflect changes in rice prices. Be-

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[20] The large size of the subsidy in 1978 and 1979, notwithstanding the effect of eliminating nearly 50 percent of the population from the receipt of food rations, is almost wholly due to the increased cost of food imports. This reflects the effects of devaluation on the rupee costs of food imports. The rupee was devalued by 46 percent against the U.S. dollar in late 1977. The effects of increased import prices on the food import and distribution bill is discussed in the annual reports of the Central Bank pertaining to these years. The assumed 20 percent annual increase in the subsidy is expected to include price and population changes.

Table 17—Fiscal costs of food subsidy programs, 1966/67-1984

Year	Rice	Flour	Sugar	Others	Net Subsidies	Food Stamps	Kerosene Stamps	Value of Total Subsidies and Stamps		Total as a Share of Government Expenditures[a]	Total as a Share of GNP
								Nominal	Real[a]		
				(Rs million)				(1952 Rs million)		(percent)	
1966/67	445.3	-22.1	-224.8	3.6	202.0	...	...	202.0	175.9	8	2
1967/68	548.9	-24.0	-239.5	10.9	296.3	...	...	296.3	243.8	10	3
1968/69	582.0	-11	-254.6	12.6	328.8	...	...	328.8	251.9	10	3
1969/70	532.4	3.6	-221.1	12.5	327.4	...	...	327.4	236.9	9	3
1970/71[b]	586.2	10.4	-64.0	1.9	534.5	...	...	534.5	376.6	14	5
1971/72	526.5	22.6	-47.1	33.2	525.2	...	...	525.2	384.2	10	4
1972/73	564.0	111.0	-21.8	24.0	677.2	...	...	677.2	409.6	13	4
1974	745.1	148.1	26.5	30.8	950.5	...	...	950.5	511.5	16	5
1975	785.5	218.0	215.0	11.9	1,230.4	...	...	1,230.4	620.5	17	6
1976	679.3	52.0	165.1	41.2	937.6	...	...	937.6	467.2	11	4
1977	943.0	363.6	70.0	47.5	1,424.1	...	...	1,424.1	700.8	16	5
1978	1,066.1	1,027.9	...	68.7	2,162.7	...	...	2,162.7	949.4	12	5
1979	1,215.6	894.1	138.6	77.7	2,326.0	508.0	59.3	2,893.3	1,146.6	14	6
1980	72.0	272.0	-144.0	105.0	305.0	1,614.0	163.0	2,082.0	654.3	7	3
1981	75.0	105.0	48.0	82.0	310.0	1,321.0	164.0	1,995.0	531.4	7	3
1982	...	...	...	100.0	100.0	1,475.0	171.0	1,746.0	419.6	5	2
1983	...	...	...	...	...	1,427.0	287.0	1,742.0	418.0	4	2
1984	...	...	...	...	...	1,405.0	397.0	1,802.0	432.0	3	1

Source: Central Bank of Ceylon, *Annual Report*, various issues (Colombo: Central Bank of Ceylon, various years).

[a] Based on 1952 rupees.

[b] 4/5 of expenditures during the fiscal year of 15 months—October 1, 1971 to December 31, 1972.

tween 1978/79 and 1981/82, the overall cost of food increased by about 25 percent annually (see Chapter 7). During the same period, the unit cost of rice imports also increased about 20 percent annually.[21] If food stamps were linked to an index of rice prices, the net cost of food stamps would have increased from Rs 1,750 million in 1979 to Rs 4,350 million in 1984. Regular indexing of food stamps to follow rice prices would thus have required 7-9 percent of government expenditures and about 3 percent of the gross national product. The efficient targeting of food stamps would have demanded a much lower proportion of government expenditures than these simulations indicate (this is discussed further below).

A comparison of the actual subsidy with the potential expenditures on the food subsidy under the two assumptions indicates the budgetary savings that the present format of the food stamp scheme may have provided. For example, during the six years of the operation of the present food stamp scheme, elimination of the traditional price subsidies and the rice rationing scheme apparently saved the Exchequer Rs 18.5 billion. These savings would have been reduced by about Rs 5 billion if food stamps had been indexed to changing rice prices.

These are, of course, gross savings. The food stamp scheme was introduced to support the incomes of the poorer households, but steps were also taken to protect wage earners in the organized sector—most of whom are not eligible to receive food stamps—from the effects of eliminating price subsidies on food and other essential commodities. Accordingly, the wages of employees of government institutions and public corporations were increased. For instance, the cost to the government of the higher wage bill for its own employees and lower export duties to permit state corporations to grant wage increases to their workers, has been estimated to have been about Rs 700 million in 1980.[22] Additional salary increases were resorted to in subsequent years along with cost-of-living adjustments. The complexity of the relationships between the rates of inflation and government policy makes it difficult to distinguish the net effect the removal of food price subsidies had on the increased wage payments. It is reasonable to conclude that not all the savings from the curtailed food subsidy were available for investment.[23]

Income Distribution

Whether distributed as price subsidies, subsidized rations, or food and kerosene stamps, all food subsidies redistribute income to some degree. Generally, such redistributive measures are expected to favor the lower segments of the income range and help them to enhance their nutritional welfare, in particular, and overall welfare, in general. The nature of the redistributive measures can be crucial in achieving the desired objectives of such policies. More specifically, the economic efficiency with which a given objective is achieved will vary inversely with the amount of leakage of resources to unintended beneficiaries. Notwithstanding that there is some uncertainty about who the intended beneficiaries are, the discussion in Chapter 4 pointed to fairly large leakages in the subsidy payments under both subsidy schemes. However, under both schemes, a large proportion of the households in the bottommost income/expenditure classes have been beneficiaries. The elimination or reduction of the leakage to higher income households and reallocation to low-income households

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[21] Sri Lanka, Department of the Food Commissioner, "The Administration Report."

[22] Central Bank of Ceylon, personal communication.

[23] This conclusion receives further justification from the increased transfer payments made to public corporations since 1979. These transfers to public corporations increased from Rs 920 million in 1979 to Rs 1,958 million in 1983. See Central Bank of Ceylon, *Review of the Economy 1983* (Colombo: Central Bank of Ceylon, 1984).

Table 18—Fiscal costs of the food subsidy under different assumptions, 1979-84

Year	Actual Subsidy	Assumption 1 Subsidy if Price Subsidies and Rations Continued	Assumption 2 Subsidy if Food Stamps Indexed Using Rice Price Index	Total as a Share of Government Expenditures Actual	Total as a Share of Government Expenditures Assumption 1	Total as a Share of Government Expenditures Assumption 2	Total as a Share of GNP Actual	Total as a Share of GNP Assumption 1	Total as a Share of GNP Assumption 2
	(Rs million)			(percent)					
1979	2,893	3,101[a]	1,750[b]	14	15	9	6	6	4
1980	2,082	3,721	2,100	7	13	7	3	5	3
1981	1,995	4,465	2,520	7	16	9	3	7	4
1982	1,746	5,358	3,024	5	15	9	2	6	3
1983	1,742	6,429	3,628	4	15	8	2	6	3
1984	1,802[c]	7,714	4,354	3	13	7	1	6	3

Sources: Based on data from Central Bank of Ceylon, *Annual Report*, various issues (Colombo: Central Bank of Ceylon, various years).

[a] On the basis of Rs 2,326 billion reported in Table 17, as the net food subsidy for the first nine months of 1979 before introduction of food stamps; 3,101 = (2,326/9) × 12.

[b] On the basis of the food stamp scheme being followed during all of 1979.

[c] This is larger than the amount of the previous year because the value of kerosene stamps increased.

would obviously increase the incomes of the latter. The possibility of such a modification of the present subsidy program will be discussed in a subsequent chapter.

Given the pattern of distribution of subsidy benefits discussed earlier, one would expect that the food subsidies reduced the inequalities of income distribution. The effect of food subsidies on concentration of income may be examined using the Gini ratio, the commonly used measure. The Gini ratio is expected to lie between 0 and 1. In a given income distribution, a lower value of the Gini coefficient indicates less inequality of income. The Gini coefficients estimated for the income distributions observed during 1978/79 and 1981/82 and the income shares by per capita income quintile are shown in Table 19.

The Gini coefficients and the income shares are estimated for income distributions with and without food subsidies to examine the implicit effect of the subsidies on income inequality. This is a partial analysis, because the "without subsidy" scenario is examined without allowing the resources released from a withdrawal of subsidies to reenter the income distribution. It is clear that under either subsidy scheme, income inequality would have been greater if there were no food subsidies. The income distribution without subsidies would have been more unequal during 1978/79 than during 1981/82, reflecting the large proportion of subsidies in income during the former period. If the subsidies did not exist, the Gini coefficient of the per capita income distribution might have increased from 0.390 to 0.432. The removal of the food stamp scheme might have increased the Gini ratio from 0.408 to 0.428 during 1981/82 under similar assumptions.[24]

Table 19—Gini ratios and income shares with and without food subsidies, 1978/79 and 1981/82

Year/Ratio or Share	With Food Subsidies	Without Food Subsidies
1978/79		
Gini ratio	0.390	0.432
Share of per capita income quintile in total income		
1	0.091	0.072
2	0.128	0.116
3	0.157	0.152
4	0.204	0.210
5	0.417	0.448
1981/82		
Gini ratio	0.408	0.428
Share of per capita income quintile in total income		
1	0.084	0.074
2	0.117	0.112
3	0.147	0.145
4	0.190	0.195
5	0.461	0.473

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Notes: These figures were calculated using per capita incomes. The 1st quintile had the smallest income; the 5th had the largest. The shares of the per capita income quintiles are calculated as

$$Y_i = (\bar{x}_i \times n_i)/Y,$$

where

Y_i = the share of quintile i in the total income of all households,

$\bar{x}_i$ = the mean per capita income of population in quintile i,

n_i = the total population in quintile i, and

Y = the total income of all households.

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[24] It should be noted that the Gini ratios discussed are based on per capita income distributions as a better measure of welfare than household income or spending unit income. According to Central Bank estimates, the Gini ratio based on incomes of income receivers increased from 0.49 in 1978/79 to 0.52 in 1981/82. Similarly, the Gini ratio based on income of spending units increased from 0.44 to 0.45 between the two periods. See Central Bank of Ceylon, *Report on Consumer Finances and Socioeconomic Survey 1981/82.*

6

PATTERNS OF FOOD CONSUMPTION AND NUTRITION BEFORE AND AFTER THE SUBSIDY PROGRAM CHANGE

A striking characteristic of the food stamp scheme is that the nominal value of the food stamps has remained constant from its inception. Underlying this characteristic may be the assumption that changes in economic activities after the post-1977 reforms effectively minimize low-income households' dependence on government transfers. An examination of whether this assumption has been validated empirically is necessary before any change in subsidy policy is made. An understanding of the changes in the relationship between income and food consumption is thus required.

Food Share

Changes in welfare between two periods are reflected in changes in the percentage of total expenditures allocated to food—the food share.

Consider the well-known Engellian relationship between income and the percentage allocated to food. Engel's Law generalizes this relationship, stating that the higher the income, the lower the proportion of income allocated to food. This relationship has been demonstrated empirically. A curve illustrating this relationship, therefore, will show a negative relationship between the proportion spent on food and total outlays or income, as illustrated by curve AB in Figure 1.[25] It shows that the poor allocate a high proportion of their total spendable resources to food, and that as these resources increase, the proportion allocated to food decreases, and larger proportions are allocated to nonfood goods.

However, several scholars have discussed the possibility that Engel's Law may not hold for households at the bottom end of the income range. Poleman has suggested that the abjectly poor will first use an increase in income to increase food intake, leading to an increase in the percentage spent on food as incomes increase up to a point beyond which the customary Engellian relation will begin to manifest itself, and that the turning point may be used to define a "poverty line."[26] The curve CDB in Figure 1 reflects this proposition. Lipton has demonstrated, using survey data from India and northern Nigeria, that the poorest households tend to defy Engel's law; their food needs are so pressing that either they do not reduce the share of food in total outlays, or outlays per person rise.[27] He provides a generalization that the moderately poor sharply reduce the food/outlay ratio as outlays per person increase but the ultra-poor do not.[28] In an analysis of household expenditure data from a survey conducted during 1969/70, Deaton observed that the food share in Sri Lankan households at first tended to rise as outlays increased but flattened out when total outlays were still low.[29]

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[25] Total spendable resources—that is, total expenditures—are used as a proxy for income, as a better approximation of permanent income of a household.

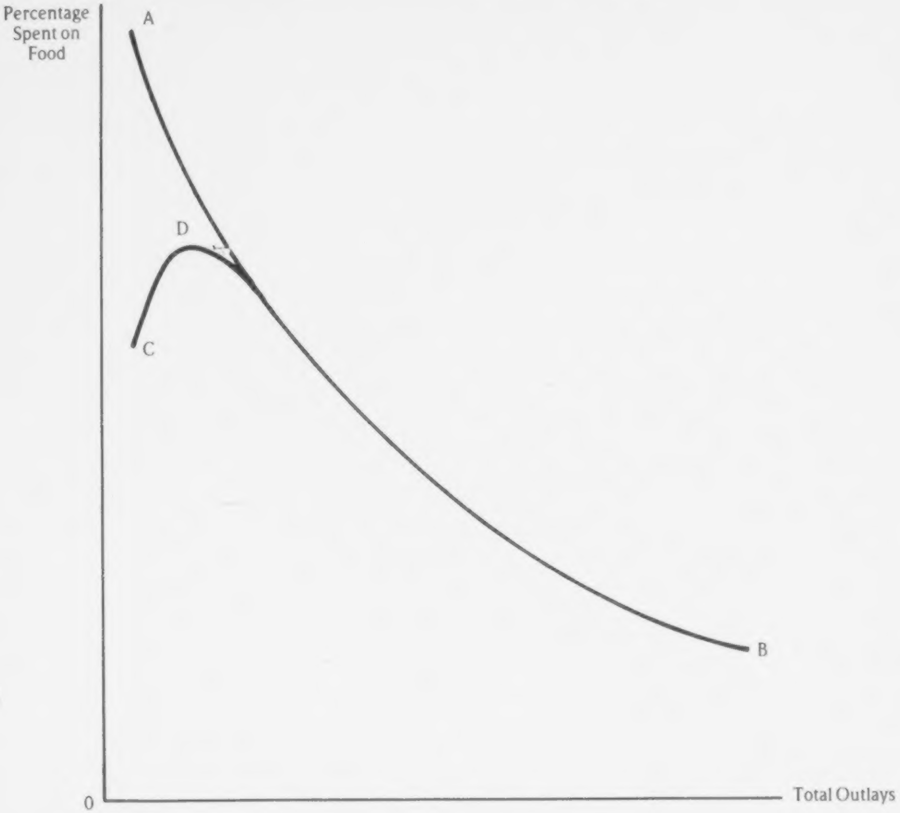
[26] Thomas T. Poleman, "Quantifying the Nutrition Situation in Developing Countries," *Food Research Institute Studies* 18 (No. 1, 1981): 1-58.

[27] Michael Lipton, *Poverty, Undernutrition, and Hunger,* World Bank Staff Working Paper 597 (Washington, D.C.: World Bank, 1983), pp. 35-49.

[28] Ibid., p. 40. Lipton rigorously defines the "ultra-poor" as those who, although spending over 80 percent of their outlays on food, cannot afford 80 percent of average recommended energy allowance; see ibid., p. 35.

[29] See Angus Deaton, *Three Essays on a Sri Lanka Household Survey,* Living Standards Measurement Study Working Paper No. 11 (Washington, D.C.: World Bank, 1981).

Figure 1—Two possibilities for the Engellian relationship



Defiance of the traditional Engel's curve can arise if the very poor have certain fixed commitments that are intrinsic to generating income and to survival, basic needs such as transportation, housing, and clothing. The character of these minimal "fixed costs of survival" may allow the percentage allocated to food to increase sharply as total outlays increase. For example, expenditures such as those on housing and transportation may not vary substantially among households in the bottom 10 to 20 percent of the income range. This allows households, say, in the 10th percentile, to allocate more to food than their counterparts in the 5th percentile. Such increases may occur up to a point such as point D in Figure 1, beyond which the Engel's curve will be as usually expected.[30]

An additional explanation for the tendency of food shares to increase may be found in a shift toward higher cost calories as income increases. Such shifts among the lowest income households may be minimal. Even if such shifts in preferences do occur, they do not explain why the food share begins to be inversely related to income after a point like D in Figure 1.

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[30] If X is total expenditure and Y is expenditure on nonfood items, the food share, W, is given by $W = (X - Y)/X$. If Y tends to remain constant or changes only minimally with increasing X, as proposed in the discussion above related to low-income households, then W will tend to increase with increasing X. Deaton has discussed how the food share itself may be distorted if total spendable resources include imputed values of goods—such as free housing provided in the estate sector in Sri Lanka—which are higher than their shadow prices to the recipient (see Deaton, *Three Essays*). However, it will not affect the relationship shown above since the imputed values of, say, housing, will be included in both X and Y.

The positive segment in the Engel's curve may be important to nutrition as well as to other welfare considerations. Expenditure classes falling within this range may form the part of the needy population that social welfare measures should be targeted at in order to achieve the highest returns.

Statistical evidence that there is a positive segment in the relationship between the food share and per capita expenditures was examined using the following functional relationship:

$$\ln Y = a + b \ln x + c(\ln x)^2 + \ln Z + e, \qquad (1)$$

where

Y = food share,

x = per capita expenditure level, and

Z = household size.

(ln denotes natural log.)

According to this functional form, if the estimated $b>0$ and $c<0$, then the value of the food share will increase, reach a maximum, and then decrease, with successive increasing values of x. The proportion of households in the expenditure range corresponding to the positive segment of the Engel's curve was estimated after finding the value of expenditures at which the function is at its maximum. The results of estimates, using CFS 1978/79 and CFS 1981/82 data, are given in Table 20.

The results indicate that a segment of the households with the lowest expenditures did increase their food shares when additional incomes were received. During 1978/79, these households were below the 10th percentile of the expenditure distribution. It was only above this expenditure level that the anticipated behavior in the relationship between food consumption and expenditures began to occur. This cut-off point was estimated to be approximately at the 18th percentile of expenditure distribution during 1981/82. Whether the increase from 10 percent in 1978/79 to 18 percent in 1981/82 is statistically significant is difficult to ascertain. It is clear, however, that the proportion of households in abject poverty did not decrease during that period. The general indication is that 10 to 15 percent of the households are in abject poverty and that any food-related income transfer to them would involve the smallest leakages to nonfood consumption.

Table 20—Estimates of the food share function, 1978/79 and 1981/82

Explanatory Variable	1978/79	1981/82
Intercept	−2.52	−4.46
	(26)	(39)
Log of per capita expenditures	1.18	1.75
	(34)	(45)
Log of per capita expenditures squared	−0.15	−0.18
	(45)	(53)
Log of household size	−0.08	−0.06
	(17)	(15)
R^2	0.61	0.58

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The t ratios are given in parentheses.

Changes in the food share between 1978/79 and 1981/82 are shown in Table 21. The food shares of different expenditure classes in both periods clearly show the dominance of food in household budgets, even among upper-income classes. Nationally, all expenditure classes spend more than 50 percent of their spendable resources on food. Those in the urban sector had the lowest average propensity to consume food, and those in the estate sector had the highest.

A comparison of food shares in the two periods indicates that the food shares of the

Table 21—Proportion of expenditures allocated to food consumption, by sector and expenditure quintile, 1978/79 and 1981/82

Year/Sector	Per Capita Expenditure Quintile 1	2	3	4	5	All
1978/79						
Urban	0.75	0.70	0.65	0.62	0.46	0.61
Rural	0.75	0.71	0.67	0.62	0.50	0.66
Estate	0.76	0.74	0.74	0.71	0.65	0.72
All	0.75	0.71	0.68	0.64	0.50	0.66
1981/82						
Urban	0.75	0.72	0.70	0.64	0.48	0.62
Rural	0.75	0.73	0.70	0.67	0.55	0.69
Estate	0.78	0.76	0.76	0.74	0.65	0.74
All	0.75	0.73	0.71	0.67	0.53	0.68

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

lowest expenditure classes remained stable, whereas those of the higher expenditure classes increased (these increases were found to be statistically significant). Stability of food shares over a period does not necessarily mean stability of nutritional welfare. As shown later in this chapter, there was a significant reduction in calorie intake of the lowest expenditure classes between 1978/79 and 1981/82. The marginal increases in the food shares of middle- and upper-expenditure classes appear to be incompatible with the high rates of growth of the economy during this period. Total outlays on food can increase following an increase in relative price of food, if the demand for food is inelastic. (Calorie consumption was found to be stable during this period. See below.) However, the food share may remain stable, decrease, or increase, depending on how increases in income, if there are any, lead to increased total expenditures. The period during which the two household surveys were conducted had certain special characteristics that may have dampened nonfood expenditures during 1981/82. It is likely that the pent-up demand for durables and semidurables may have been met in the years of import liberalization, which began in late 1977. Expenditures on these goods by higher income classes may have been somewhat less intense by 1981/82 (see Appendix 2).

Calorie Consumption

The methodology used to collect food consumption and expenditure data and the range of food items covered in the two Central Bank surveys, CFS 1978/79 and CFS 1981/82, are practically identical. The figures reported for food consumption were transformed to calorie equivalents using conversion factors recommended by the Sri Lanka Medical Research Institute of Sri Lanka (see Appendix 4 for a discussion of the estimation of calorie consumption). Per capita calorie consumption and other related statistics reported have been computed for the household. Average per capita calorie consumption may be computed either for the household, in which case

Per capita household calorie consumption

$$= 1/H \sum_{h=1}^{H} (C_h/N_h), \tag{2}$$

where

C = calories,
h = individual household,
H = sum of all households, and
N = number of individuals;

or for the individual, in which case

Per capita calorie consumption

$$= (1/\sum_{h=1}^{H} N_h) \sum_{h=1}^{H} N_h(C_h/N_h). \tag{3}$$

Results of the two methods may not be the same because the method for the households is not weighted at the household level.

The method for the household is used in this analysis.

A comparison of national per capita calorie consumption figures for 1978/79 and 1981/82 shows no statistically significant difference (Table 22).[31] Average per capita consumption of calories during both periods—2,283 per day in 1978/79 and 2,271 per day in 1981/82—are higher than the figure recommended for an average Sri Lankan, 2,200 calories per day.[32]

With regard to mean calorie consumption in the three sectors, the estate sector appears to have been affected most by the price changes between the two periods. Average consumption in the estate sector was 2,639 calories during 1981/82, nearly 5 percent less than the average consumption of 2,763 calories in 1978/79. It is difficult to estimate how much such a decline may have affected the nutrition of these households, because there are no sector-specific nutritional norms. These and other surveys have consistently indicated that calorie consumption in the estate sector was higher than in the other two.[33] The energy intake may have been raised by the occupational requirements and climatic characteristics of the estate sector and by limited demand for nonfood expenditures such as transportation and housing.

Mean calorie intake also declined, negligibly, in the urban sector. In the rural sector, where vast increases in agricultural production occurred in the period under consideration, calorie consumption increased.

Of greater relevance to the income transfer program than mean intake is the distribution of calorie intake by income. Table 23 shows that the nutritional position of the bottom two deciles had deteriorated substantially by 1981/82. (See Appendix 1, Table 43 for adult equivalent calorie consumption by expenditure class.) The reduction in the mean number of calories of the bottom decile was around 155 calories, about 12 percent of the mean in 1978/79. In the second decile, the reduction was 105 calories (or 6 percent of the mean in 1978/79). Mean consumption in the third decile also deteriorated, although to a lesser degree—3 percent from the mean in 1978/79. In contrast are the increases observed in the upper expenditure classes (except the highest decile, which showed a decline of about 2.5 percent from an already high level). The middle income classes were able to sustain or slightly improve their nutritional welfare. Although the lower income classes maintained their shares of expenditures allocated to food, as seen in the earlier discussion, the absolute number of calories that allocations could purchase was significantly lower in 1981/82 than in 1978/79.

Poorer households may have little or no flexibility in shifting their budget shares. Their nonfood expenditures arise from meeting basic needs, such as clothing, housing, and transportation. These minimum

Table 22—Apparent mean calorie consumption, by sector, 1978/79 and 1981/82

Sector	1978/79	1981/82
	(calories/capita/day)	
Urban	2,240	2,229
Rural	2,230	2,246
Estate	2,763	2,639
All	2,283	2,271

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

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[31] Calorie consumption is compared on a per capita basis. Given the proximity of the two periods under comparison, changes in household composition are not expected to be significant.

[32] Sri Lanka, Department of Census and Statistics, *Socioeconomic Survey of Sri Lanka 1969/70, Special Report on Food and Nutritional Levels of Sri Lanka* (Colombo: Department of Census and Statistics, 1972).

[33] According to the Socioeconomic Survey of 1969/70 (ibid.), mean calorie consumption in the urban sector was 2,161; in the rural sector, 2,268; and in the estate sector, 2,459. According to Sri Lanka, Department of Census and Statistics, "Labour Force and Socioeconomic Survey 1980/81," Colombo, 1983, mean calorie consumption in the urban sector was 2,095; in the rural sector 2,257; and in the estate sector, 2,400.

Table 23—Apparent per capita daily calorie consumption by expenditure decile and sector, 1978/79 and 1981/82

Year/Sector	Per Capita Expenditure Decile									
	1	2	3	4	5	6	7	8	9	10
	(calories/capita/day)									
1978/79										
Urban	1,288	1,620	1,718	1,824	1,917	2,079	2,260	2,495	2,674	3,181
Rural	1,346	1,663	1,855	1,999	2,155	2,385	2,505	2,757	3,071	3,336
Estate	1,324	1,821	2,027	2,222	2,490	2,716	3,032	3,160	3,884	3,845
All	1,335	1,663	1,848	1,994	2,157	2,377	2,528	2,738	3,054	3,296
1981/82										
Urban	1,137	1,351	1,589	1,784	1,927	2,088	2,216	2,484	2,705	2,882
Rural	1,186	1,586	1,813	2,031	2,184	2,392	2,581	2,869	3,203	3,475
Estate	1,214	1,607	1,924	2,122	2,371	2,687	3,024	3,344	3,783	3,549
All	1,181	1,558	1,794	2,008	2,168	2,373	2,553	2,838	3,120	3,216

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st decile had the smallest expenditures; the 10th had the largest.

costs cannot be reduced further without threatening survival. While it is not possible to quantify the loss in welfare due to price increases in nonfood amenities, the nutritional loss is clearly indicated here.

Notwithstanding the somewhat limited comparability of CFS 1978/79 or CFS 1981/82 data with a set of data gathered by the Department of Census and Statistics on food consumption and socioeconomic status of households during 1980/81, Figure 2 shows that most households in the bottom three deciles were unable to recover from the impact of price changes that occurred during 1979/80.[34] While about 70 percent of other households improved their calorie consumption from the relative deterioration seen in 1980/81, the opposite seems to have happened to the bottom 20 to 30 percent.

The rural sector seems to have experienced the smallest amount of adverse effects from price and income changes (Table 23). Significant reductions in calorie consumption appear to have been confined to the bottom 20 percent. The calorie consumption of households in this quintile registered a decline of about 8 percent in calorie consumption compared with 1978/79. The calorie consumption of their counterparts in the urban and estate sectors fell more—13 percent and 10 percent, respectively.

Urban and estate households in the second quintile—deciles 3 and 4—also had their nutritional welfare reduced about 5 percent. In the estate sector, such reductions also appear in the fifth decile. Changes in wheat flour prices may have been significant in seriously depleting calorie consumption in the estate sector. In 1978/79, calories from wheat flour constituted a third of the average number of calories consumed by estate households. By 1981/82, wheat flour prices had more than doubled, and consumption fell by over 25 percent.

The Existence of the "Ultra-Poor"

Moving away from the averages, the extent of nutritional poverty among households can be assessed using Lipton's criterion of the "ultra-poor."[35] Ultra-poor households are those consuming less than 80 percent

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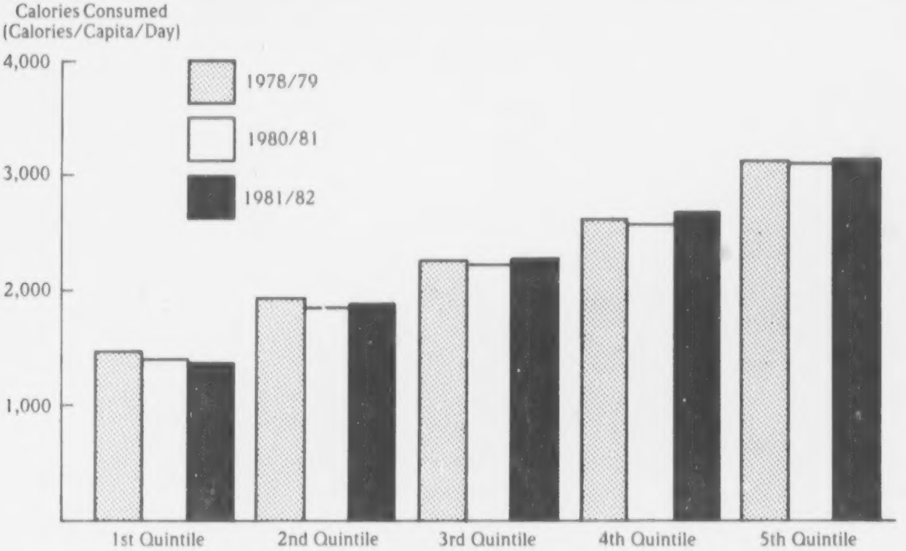
[34] For a description of this survey and an analysis of data therein, see David E. Sahn, "The Effect of Price and Income Changes on Food-Energy Intake in Sri Lanka," in *Economic Development and Cultural Change*, forthcoming.

[35] Lipton, *Poverty, Undernutrition, and Hunger.*

Figure 2—Per capita calorie consumption, by expenditure quintile, 1978/79, 1980/81, and 1981/82



Sources: The basic data for 1978/79 are from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape). The data for 1980/81 are compiled from David Sahn, "The Effect of Price and Income Changes on Food-Energy Intake in Sri Lanka," *Economic Development and Cultural Change*, forthcoming. The basic data for 1981/82 are from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Notes: The 1st quintile had the smallest expenditures; the 5th had the largest.

of recommended calorie allowance although more than 80 percent of their expenditures are used to purchase food. The percentage of households falling into this category is shown by expenditure class in Table 24. The percentage of ultra-poor households in all households increased from 4.6 percent in 1978/79 to 6.0 percent in 1981/82. This increase, though small, was statistically significant. The highest proportion of the ultra-poor is in the poorest quintile, as would be expected, and a worsening of nutritional poverty in this quintile by 1981/82 is clearly indicated.

The new policy package envisaged substantial growth in agricultural production, particularly production of nonexport crops, the most important of which is paddy. In fact, agricultural performance under the new policy regime has been noteworthy. Between the 1976-78 and 1980-82 periods, agricultural gross domestic product (GDP) grew at an average annual rate of 4.36 percent, with paddy production growing at an annual rate of 7.9 percent.[36] Comparative rates of growth during the previous 7 years were 1.85 for agricultural GDP and 1.4 for paddy production. This increase of agricultural production may have been aided by the removal of constraints on transportation and the supply of inputs, increased demand for domestic agricultural products—particu-

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[36] Erik Thorbecke and Jan Svejnar, "Effects of Macroeconomic Policies on Agricultural Performance in Sri Lanka, 1960-81," prepared for the OECD Development Center, Paris, 1984.

Table 24—Share of households that are "ultra-poor", by expenditure quintile, 1978/79 and 1981/82

Per Capita Expenditure Quintile	1978/79	1981/82
	(percent)	
1	19.5	25.0
2	2.5	3.9
3-5	. . .[a]	. . .[a]
All	4.6	6.0

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Notes: Ultra-poor households are those households that consume less than 40 percent of the recommended calorie allowance even though they allocate more than 40 percent of their expenditures to food. The 1st quintile had the smallest expenditures; the 5th had the largest.

[a] Incidence is zero or negligible.

larly due to the removal of price subsidies on imported wheat flour—favorable weather, and larger agricultural investments. The overall growth of the economy has also been remarkable; the GDP grew at rates of 8.2 percent (1978), 6.3 percent (1979), and 5.8 percent (1980 and 1981), with the contribution of agriculture outstanding.[37]

How were the poorer agricultural households affected by the expansion of economic activity? If the final effect can be seen through the incidence of ultra-poverty, Table 25 indicates that agricultural workers, both in the domestic and export sectors, are worse off. Their poverty rates were significantly greater in 1981/82 than in 1978/79. Even among farming households, a slight deterioration is indicated.

Discussion

Any inferences about changes in nutritional welfare between two periods are plagued by problems of standardization. These problems get compounded when the indicator used is the apparent daily per capita calorie consumption. A reasonable comparison would require standardization of at least the more important determinants of variability in food supplies and consumption. These include technology, weather, input supplies, administered prices, internal and external trade, data bases, and perhaps changes in preferences. Fortunately, the comparisons discussed in this study are not affected by the major problems of standardization because the data bases are compara-

Table 25—Share of agricultural households that are "ultra-poor", 1978/79 and 1980/82

Occupational Group	Poorest 20 Percent of Households		All Households	
	1978/79	1981/82	1978/79	1981/82
		(percent)		
General farmers	15.8	17.8	3.0	3.2
Plantation workers	14.0	23.8	3.2	6.3
Agricultural workers (mainly paddy)	23.8	36.7	10.8	15.4

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

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[37] World Bank, "Economic Adjustments in Sri Lanka: Issues and Prospects," Washington, D.C., May 1982.

ble to a high degree and the two periods under comparison are close. The feature that best distinguishes the two periods vis-à-vis food supplies and consumption is the policy change on price subsidies and ration issues.

The most reliable of the components of food availability recorded in annual food balance sheets are those for rice, both imports and domestic production, and wheat flour, all of which is imported. Despite drought during one season in 1982, the per capita availability of calories from rice was 7 percent greater in 1981/82 than in 1978/79.[38] Domestic rice production increased by 9 percent per capita, whereas imports declined by 25 percent, mostly because of the deletion of the ration requirements. The weight of imports in the total supply of rice was 13 percent in 1978/79. Calories from wheat flour, on the other hand, declined dramatically, by 31 percent. Reductions in the consumption of wheat flour and wheat flour products explain most of the calorie consumption reductions of the lower income classes in 1981/82.

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[38] Sri Lanka, Department of Census and Statistics, "Food Balance Sheets," Colombo, 1978, 1979 (mimeographed).

7

INFLATION AND THE REAL VALUE OF FOOD STAMPS

A basic difference between the food stamp scheme and the rice rationing scheme is that the value of food stamps is not indexed to changes in the cost of the foods that are to be purchased with them. Under the rice rationing scheme, indexing was automatic because a certain quantity of rice was issued free of charge. The primary reason why food stamps are not indexed may be the need to gradually decrease the share of government transfers in total expenditures and to divert the savings to investment. As noted earlier, economic growth itself was expected to reduce the dependence on government transfers. An implication of this is that the welfare losses from price increases may have been expected to be offset by increases in income and through substitutions.

Substitutions do occur as prices and income change. This makes it difficult to develop a "true" cost-of-living index empirically. The commonly used Laspeyres index, for example, uses price changes in a basket of goods in a base period to infer welfare changes stemming from price changes in a later period. However, the relative prices of goods within the basket, and the composition of the basket of goods as well, may have undergone changes in the second period so that the consumer can maintain similar levels of perceived welfare. An example would be substitution of a low-cost calorie source for a high-cost source, when relative prices favor such a change, to maintain the perceived benefits of consumption. Or nonfood consumption could be reduced and food consumption increased to minimize deterioration of nutritional welfare. A comparison of the final count of calories consumed during two periods would provide a reasonable reflection of the effect of all price and income changes, with the consequent adjustments made.

Price Changes

In this analysis, unit prices of different foods were derived by dividing the expenditures by quantities purchased (see Table 26). These imported prices correspond to administered prices, such as those on wheat, and prices published by the Central Bank.[39] Food items that did not contain information on the quantity in a unit, such as meals purchased and consumed away from home, were not included in the analysis. Changes in the prices of nonfood items were examined through five representative nonfood categories: housing, fuel, cloth, transportation, and miscellaneous. The price of housing was estimated by dividing expenditures on housing reported in the surveys by square meters of the floor area of the dwelling. Fuel was represented by the price of kerosene, cloth by the price of Batticaloa sarongs, and transportation by the car hire charges for a kilometer. These representative prices were obtained from the Central Bank's *Price and Wage Statistics* for the relevant years.[40] For the miscellaneous component, the price index for the miscellaneous group in the commodity-wise price indexes published by the Central Bank was used.[41]

Prices have increased most for wheat and wheat products. These foods, which constituted about 7 percent of the total

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[39] Central Bank of Ceylon, *Price and Wage Statistics, Retail, Producer, and Input Prices and Wages* (Colombo: Central Bank of Ceylon, 1981 and 1982).

[40] Ibid.

[41] Central Bank of Ceylon, *Annual Report*, various issues (Colombo: Central Bank of Ceylon, various years).

Table 26—Price and budget shares of major food and nonfood commodities, 1978/79 and 1981/82

Commodity	Units	1978/79 Quantity	1978/79 Price	1978/79 Budget Share	1981/82 Quantity	1981/82 Price	1981/82 Budget Share
			(Rs)	(percent)		(Rs)	(percent)
Food							
Rice	kilograms	7.94	3.58	18.6	8.95	6.09	20.4
Wheat	kilograms	1.65	2.56	2.7	0.97	6.66	2.4
Bread	kilograms	2.45	2.38	3.8	1.60	6.02	3.5
Grains	kilograms	0.09	2.48	0.2	0.13	4.73	0.3
Cereal preparations	kilograms	0.21	9.42	1.0	0.17	22.73	1.0
Meat	kilograms	0.22	4.77	1.2	0.24	7.03	1.1
Fish	kilograms	0.93	10.57	5.1	0.98	17.86	5.1
Roots	kilograms	0.37	1.79	0.3	0.87	2.83	0.8
Vegetables	kilograms	3.11	2.36	4.8	2.82	4.56	5.1
Pulses	kilograms	0.25	6.26	1.3	0.23	9.98	1.2
Condiments	kilograms	1.02	10.97	6.2	1.00	17.26	5.6
Coconuts	numbers	8.34	0.91	4.9	8.33	1.56	4.8
Sugar	kilograms	0.92	7.00	3.9	0.99	13.80	4.8
Oil	liters	0.22	6.04	1.0	0.23	11.30	1.1
Milk	liters	0.80	4.93	1.7	0.73	24.70	1.9
Fruit	kilograms	0.37	1.74	0.6	0.51	7.26	0.7
Beverages	liters	0.13	13.51	1.1	0.14	23.47	1.1
Nonfood							
Housing[a]	. . .	. . .	1.16	5.2	. . .	1.68	5.0
Fuel[b]	. . .	. . .	0.76	4.8	. . .	4.22	6.4
Cloth[c]	. . .	. . .	37.10	7.0	. . .	43.91	4.6
Transportation[d]	. . .	. . .	4.05	2.8	. . .	10.09	2.9
Miscellaneous[e]	. . .	. . .	246.09	14.2	. . .	370.22	12.9

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

[a] The price of a square meter of floor area is used as a proxy for the price of housing.

[b] The price of a liter of kerosene is used as a proxy for the price of fuel.

[c] The price of a Batticaloa sarong is used as a proxy for the price of cloth.

[d] The car hire charge for a kilometer is used as a proxy for the price of transportation.

[e] These figures use the price index for miscellaneous goods published by the Central Bank.

budget of a representative household, increased about 155 percent between the two periods. The other most affected item, though it had a smaller proportion of the total budget, was milk. It registered a 400 percent increase. The increase in rice prices, the most important single item in the average household budget, was about 70 percent. Most other price increases on domestically produced foods were in line with the price change for rice.

The most seriously affected nonfood item was fuel, the price of which increased by 450 percent. The cost of transportation, which increased by 150 percent, reflects the changes in gas prices that were effective by the mid-1980s. Least affected by the inflationary trend was cloth, the price of which increased only 18 percent. The price of a Batticaloa sarong, a locally produced men's garment, was selected to represent cloth, but it may have given an underestimation of the changes in cloth prices brought about by devaluation of the domestic currency. The change in the price of miscellaneous goods is expected to represent changes in the price of durables.

Price indexes for food, nonfood, and all commodities are given in Table 27. These are Laspeyres-type indexes that use the ratio of the expenditures required to purchase a given bundle of goods in 1978/79 to the

Table 27—Cost-of-living indexes for 1981/82, with 1978/79 as the base year, by expenditure quintile

Per Capita Expenditure Quintile	Food	Nonfood	All
1	1.89	2.48	2.05
2	1.94	2.20	2.02
3	1.96	2.13	2.02
4	1.99	2.02	2.00
5	2.00	1.76	1.85
All	1.94	1.91	1.92

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Notes: These indexes are Laspeyres indexes, based on the prices of commodities and the quantities purchased by households. The index for each household is derived first and the mean indexes are derived by dividing the sum of the household indexes by the total number of households. The 1st quintile had the smallest expenditures; the 5th had the largest.

expenditures required to purchase the same bundle at 1981/82 prices.[42] The estimated indexes are constructed using cross-section data that incorporate most socioeconomic and geographic variations in prices and expenditures, maximum commodity coverage, and income-class specificity.[43] The overall index shows that the prices of the bundle of commodities that an average household consumed in 1978/79 increased 92 percent by 1981/82. Food prices increased by 94 percent and nonfood prices by 91 percent. These increases are substantially larger than those shown by the official cost-of-living index. Based on the official indexes published by the Central Bank, the weighted indexes for 1981/82 relative to 1978/79 show only a 65 percent increase in the overall index, with a 70 percent increase for food and a 55 percent increase for nonfoods.

Low-income households faced somewhat higher cost-of-living changes than high-income households did. This was because indexes for nonfood goods faced by the low-income households were relatively high. Price indexes are determined by the shares of each component in the total budget in the base period and the price changes after. Some components, such as fuel, which had large shares in the budgets of low-income households (Table 28), also had the largest price increase. Price increases were lowest for items for which high-income households allocated the most and low-income households allocated the least. Miscellaneous goods, in which durables figure prominently, is a case in point. Similar cases are housing and clothing. Given the nature of budgetary allocations among the low-income households, no income-class-specific price index will fail to reflect the deleterious effects that price increases for basic commodities have on these households.

Real Value of Food Stamps

The deflators shown in Table 27 indicate that the real value of the food stamps received by low-income households in 1981/82 was a little more than 50 percent of the original value. It was 60 percent of the original value if the overall deflator of 1.65 from the Colombo Consumers' Price

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[42] The Laspeyres index, L, is derived as follows:

$$L = (\sum_{i=1}^{k} P_i^1 Q_i^0 / \sum_{i=1}^{k} P_i^0 Q_i^0) = \sum_{i=1}^{k} (P_i^1 / P_i^0) W_i,$$

where P_i^1 = price of commodity i in 1981/82; P_i^0 = price of commodity i in 1978/79; W_i = weight of commodity i in 1978/79; and Q_i^0 = quantity of commodity i in 1978/79.

[43] The Colombo Consumers Price Index, the only available published price index, is constructed by the Department of Census and Statistics and published by the Central Bank. It is based on a set of household expenditures of working class households in the Colombo municipality area.

Table 28—Budget shares of nonfood commodities, by expenditure quintile, 1978/79 and 1981/82

Commodity/Year	Per Capita Expenditure Quintile 1	2	3	4	5	All
	(percent)					
Housing						
1978/79	4.4	4.5	4.8	5.3	7.0	5.2
1981/82	3.6	3.9	4.3	5.0	7.8	4.9
Fuel						
1978/79	5.9	5.2	4.9	4.4	3.4	4.8
1981/82	8.1	7.1	6.4	5.8	4.5	6.3
Cloth						
1978/79	4.5	6.4	7.1	8.2	8.9	7.0
1981/82	3.1	4.0	4.6	5.2	6.0	4.6
Transportation						
1978/79	1.9	2.3	2.4	3.0	4.4	2.8
1981/82	1.6	2.0	2.7	3.1	5.0	2.9
Miscellaneous						
1978/79	7.7	10.0	12.2	15.3	25.5	14.1
1981/82	7.7	9.4	10.5	13.4	23.3	12.8

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

Index is used, and 58 percent if the rice price index of 1.70 is used (Table 27). A calorie price index, as defined and estimated in the section below, puts the real value of food stamps in 1981/82 at around 56 percent of its original value. In other words, a properly indexed food stamp scheme should have given the beneficiaries in low-income households a food stamp benefit of between Rs 30 and Rs 36, per capita, in 1981/82.

Price Changes and Substitutions

To what degree did substitutions between food and other goods and substitutions among foods mitigate the real income losses due to inflation? In fact, the promotion of substitutions to reflect resource availability was a primary objective of the removal of price distortions in the economy.

A comparison of the changes in the unit price of calories with the changes in the food price index may be a useful indicator of the degree to which calorie sources are substituted for each other. For this purpose, the calorie price index, defined as the ratio of the price of calories in 1981/82 (Period 1) to the price of calories in 1978/79 (Period 0), and the food price index, defined earlier, could be used. The relationship between the calorie price index and the food price index can be summarized as follows: For a given quantity of calories consumed in the base period 0, that is, C_0,

$$Z = [(C_0 P_c^1 / C_0 P_c^0) / \sum_{i=1}^{k} W_i^0 (P_i^1 / P_i^0)]$$

$$= \frac{\text{Calorie Price Index}}{\text{Food Price Index}} \gtreqless 1 \qquad (4)$$

where

Z = ratio of calorie price index to food price index,

P_c^1, P_c^0 = unit price of calories in period 1 or period 0,

W_i^0 = share of a food item, i, in the total food budget in period 0, and $i = 1 \ldots k$, and

P_i^1, P_i^0 = price of commodity i in period 1 or 0.

Several implications follow from this. If $Z<1$ or $Z>1$, then W_i^0 might not equal W_i^1, at least for some W_i. But if $Z = 1$, W_i^0 might equal W_i^1. If $Z<1$, that is, if the calorie price index is less than the food price index, "calorie-efficient" substitutions will have taken place.

Some implications also follow for C_0, calorie consumption in period 0, and C_1, calorie consumption in period 1. If $Z = 1$ and $C_0 = C_1$, then there would have been no substitutions, and income increases would have offset the real income losses from inflation. If $Z<1$ and $C_0>C_1$, then, in spite of "calorie-efficient" substitutions, income increases would not have compensated for the losses in real income from inflation. If $Z<1$ and $C_0 = C_1$, then "calorie-efficient" substitutions alone or substitutions associated with income increases would have maintained nutritional intake. If $Z>1$ and $C_0<C_1$ or $C_0 = C_1$, then income increases would have allowed movement to higher-cost calorie sources, that is, would have allowed greater sophistication in diet, without reducing the original calorie intake. Lastly, if $Z>1$ and $C_0>C_1$, "calorie-inefficient" substitutions have taken place. These relationships should be considered under the assumptions that during the period of observation, no changes occurred in tastes, preferences, or energy requirements.

Indexes at the national mean in Table 29 indicate that, overall, "calorie-efficient" substitutions were made. The near-equality in average calorie consumption shows that the substitution effects together with income effects kept nutritional welfare at the average. Substitutions among calorie sources reduced the final food expenditures required to purchase the same number of calories under new prices by about 7 percent.[44]

Among expenditure classes, similar calorie-efficient substitutions are indicated. Changes in nominal incomes in the bottom quintile were not large enough to compensate for the real income losses from price changes. Hence, a smaller number of calories was consumed per capita per day in 1981/82 than in 1978/79.

The rural sector has usually had a greater potential for substitutions among calorie sources than the other two sectors, particularly within the starchy staples group. And it did have the largest degree of calorie-efficient substitutions. These substitutions, reinforced by increased incomes, either maintained or increased calorie consumption except in the lowest expenditure class. The degree of substitution was lower in the other two sectors, and lowest in the urban sector. The combination of a calorie-inefficient substitution with a deterioration in calorie consumption was found only for the lowest income class in the urban sector. A combination of factors may have contributed to this, including insufficient increases in incomes, a limited ability to shift resources from nonfood to food, and, perhaps, bottlenecks in the supply of cheaper calories.

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[44] From Table 29, a crude estimate of the degree of substitution may be derived as: $(1.94 - 1.80)/1.94 = 0.07$.

Table 29—Calorie consumption and price and calorie and food price indexes, by sector and expenditure quintile

Per Capita Expenditure Quintile/Sector	Calories Consumed		Calorie Price		Calorie Price Index	Food Price Index	Ratio of the Calorie Price Index to the Food Price Index
	1978/79	1981/82	1978/79	1981/82			
	(calories/capita/day)				(Rs/1,000 calories)		
Urban							
1	1,449	1,254	1.2825	2.5390	1.97	1.93	1.020
2	1,756	1,674	1.4724	2.7151	1.84	1.97	0.934
3	1,994	2,005	1.5532	2.8922	1.86	2.04	0.911
4	2,362	2,340	1.6270	3.0664	1.88	1.99	0.945
5	2,950	2,803	1.9560	3.6680	1.88	2.06	0.913
All	2,240	2,229	1.6370	3.1460	1.92	1.99	0.964
Rural							
1	1,493	1,330	1.2393	2.2158	1.79	1.88	0.952
2	1,922	1,915	1.3360	2.3691	1.77	1.92	0.922
3	2,257	2,276	1.4082	2.5188	1.79	1.94	0.923
4	2,609	2,701	1.4915	2.6878	1.80	1.94	0.928
5	3,167	3,304	1.7094	2.9868	1.75	1.99	0.879
All	2,230	2,246	1.4190	2.5270	1.78	1.92	0.925
Estate							
1	1,648	1,473	1.1912	2.3024	1.69	1.87	0.904
2	2,120	2,014	1.2813	2.3476	1.82	1.91	0.953
3	2,592	2,541	1.3144	2.4472	1.86	1.95	0.954
4	3,064	3,175	1.4226	2.5488	1.78	2.05	0.868
5	3,852	3,700	1.5024	2.7170	1.80	1.93	0.932
All	2,763	2,639	1.3580	2.4730	1.82	1.92	0.947
All							
1	1,490	1,368	1.2456	2.2571	1.81	1.89	0.957
2	1,914	1,894	1.3442	2.4193	1.79	1.94	0.922
3	2,256	2,264	1.4210	2.5660	1.80	1.96	0.918
4	2,612	2,678	1.5118	2.7462	1.80	1.99	0.904
5	3,152	3,154	1.7782	3.2044	1.80	2.00	0.900
All	2,283	2,271	1.4600	2.6300	1.80	1.94	0.927

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

8

IMPACT OF FOOD STAMPS ON NUTRITION AND COST-EFFECTIVENESS

The effect of government transfers on the nutritional welfare of recipients can be evaluated through their effect on energy intake. The focus will be on the calorie-deficient groups who were to be the targets of subsidies after the policy changes of 1978 and 1979.

Subsidies in Food Budgets

As Table 30 shows, the total subsidy received through rice rations and other food price subsidies constituted a quarter of the food budget of the average rice ration recipient during 1978/79. This contribution was halved under the food stamp scheme. For the beneficiaries in the lowest expenditure classes, who spend less on food in absolute terms, the subsidies are of greater importance. Subsidies made up 32 percent of the food expenditures of the lowest quintile in 1978/79 and 20 percent in 1981/82. In 1978/79, the contribution of the subsidy was 16 percent for the highest expenditure class, whereas by 1981/82 the share had dropped to around 5 percent, reflecting the effect of the removal of general price subsidies. The pattern followed by subsidies in the food budgets of households in the three sectors was the same pattern they followed in the total budgets, discussed in Chapter 4.

The Marginal Propensity To Consume out of Subsidy Income

Food consumption by needy households may be increased by providing cash transfers or by issuing certain quantities of food these households usually consume at a price lower than the market's. At the extreme, such quantities may be issued free of charge, as rice was during 1978/79. Cash transfers may be related to food, in the form of food stamps, for example. In Sri Lanka, regulations governing the food stamp scheme allow recipients to deposit unused food stamps in Post Office savings accounts. Until January 1979, the food stamp scheme in the United States required that certain purchases be made from the recipient's own funds before food stamps could be used.[45] Nevertheless, at no time were encashments permitted.

Conceptually, if the value of the transfer received is less than what the recipients spend on food, the proportion of an additional rupee spent on food—the marginal propensity to consume—should be the same whether the additional rupee is received from the subsidy transfer or from cash earnings. Here, the subsidy transfer is inframarginal and does not restrict the food expenditures. The subsidy transfer may be extramarginal if the subsidy received is greater than the amount of food expenditures that recipients would have made before receiving the subsidy. In this situation, the effect of subsidy income on food expenditures would be different from the effect of normal cash earnings.

Studies of the U.S. food stamp program have indicated that subsidy transfers can have a larger marginal effect on food expenditures than do normal cash incomes. In almost all the studies, the marginal propensity to expend on food out of subsidy income is more than double that estimated

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[45] Larry Salathe, "Impact of Elimination of the Food Stamp Program's Purchase Requirement on Participants' Food Purchases," *Southern Journal of Agricultural Economics* 12 (1980): 87-92.

Table 30—Share of food subsidies in food budgets of recipients by sector and expenditure quintile, 1978/79 and 1981/82

Sector/ Year	Per Capita Expenditure Quintile					
	1	2	3	4	5	All
			(percent)			
Urban						
1978/79	34.8	25.0	21.9	18.0	15.8	25.5
1981/82	17.4	12.2	8.7	7.7	6.0	11.4
Rural						
1978/79	31.8	26.1	22.1	18.6	16.8	25.4
1981/82	20.6	13.3	9.3	7.3	5.5	13.6
Estate						
1978/79	33.3	26.9	25.5	23.5	14.2	25.7
1981/82	12.9	10.4	6.4	5.8	4.4	9.3
All						
1978/79	32.4	25.9	22.2	18.8	16.5	25.4
1981/82	20.2	13.1	9.2	7.3	5.6	13.2

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

for normal cash income.[46] The major explanation for these differences is that there are low-income households for whom the transfers are extramarginal. These households usually have high marginal propensities to spend on food out of income. Senauer and Young have recently shown that even households with food expenditures greater than the subsidy income could have significant differences between the marginal effects of the two sources of income.[47]

Under the rationing scheme (1978/79) and the food stamp scheme (1981/82), the subsidy transfers in Sri Lanka were almost wholly inframarginal. Would the form food subsidies took during these periods have enabled more food/calorie consumption at the margin than a normal cash transfer would have allowed? In the model specified below, the marginal propensities to consume food (calories) or to spend income on food are treated as differing by the source of income, whether it is from food subsidies or from incomes from all other sources. The hypothesis tested is that there is no such difference. The statistic to test whether the hypothesis is to be rejected or accepted is the F-ratio between the sum of squares of the regression run under the model and the sum of squares of the regression run under the hypothesis, adjusted for degrees of freedom.[48]

The Model

The model for this test is

$$C = \alpha + \beta_1(Y - S) + \beta_2(S) + \delta_{11}(Y - S)^2 + \delta_{12}(Y - S)(S) + \delta_{22}(S)^2 + e;$$

$$\partial C/\partial(Y - S) = \beta_1 + 2\delta_{11}(Y - S) + \delta_{12}(S);$$

$$\partial C/\partial(S) = \beta_2 + \delta_{12}(Y - S) + 2\delta_{22}(S); \qquad (5)$$

where

Y = total household expenditures,
S = household subsidy income, and
C = household calorie consumption or food expenditures.

The hypothesis to be tested is either

$$\beta_1 = \beta_2;\ 2\delta_{11} = \delta_{12} = 2\delta_{22} \qquad (6)$$

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[46] The marginal impact of food stamp transfers is estimated to be as high as 17 times the normal cash marginal impact by J. Benus, J. Kmenta, and H. Shapiro in "The Dynamics of Household Budget Allocation to Food Expenditures," *Review of Economics and Statistics* 58 (May 1976): 129-138.

[47] Benjamin Senauer and Nathan Young, "The Impact of Food Stamps on Food Expenditures: Rejection of the Traditional Model," *American Journal of Agricultural Economics* 68 (February 1986): 37-43.

[48] The author is thankful to Professor Yair Mundlak for his comments and assistance in the derivation of this test.

or[49]

$$C = \alpha + \beta_1(Y) + \delta_1(Y^2) + e. \qquad (7)$$

The test statistic is

$$F^* = [(R_m^2 - R_H^2)/(1 - R_M^2)][(N - 6)/3] \qquad (8)$$

and the hypothesis can be rejected if $F^* > F^{0.05}_{3,N-6}$.

The test was conducted on two data sets—CFS 1978/79, made when rice quantity rationing was in effect, and CFS 1981/82, made when the food stamp system was in effect.

Results

The results, given in Tables 31-33, indicate that under the food stamp program, the source of income makes no difference in the marginal propensity to consume calories or to spend on food. Whether an additional rupee came from food stamps or other sources of income, the increments to calories and food expenditures were the same. In this connection, it is pertinent to point out that the patterns of food stamp use observed in the Kandy case study indicated that the recipients perceived little or no distinction between cash incomes and food stamps by the recipients (see Appendix 5). But the results from the period when rice was rationed show that the source of income does make a significant difference in the marginal propensity.

What causes subsidy incomes to have a greater and different marginal effect than other forms of income under price-subsidized quantity rationing and not under the food stamp scheme? Under the model specified earlier:

$$C = \alpha + \beta_1[(Y - S) + \lambda(S)] + \ldots + e; \qquad (9)$$

$\lambda > 1$ and unique to S. The existence of λ in the case of food subsidies may have any of a number of causes. One could be the increase in food consumption when housewives control the subsidy income, which assumes that the housewife has the traditional role of mother and manager of the food resources in the household and that control by housewives minimizes leakages of income to nonfood consumption. Another might be the moral obligation to use a larger proportion of subsidy income than normal income for food consumption because food subsidies are given to increase food consumption.[50] Also, there are difficulties in determining the real value of the subsidy.

Under the rice rationing scheme, the housewife usually kept custody of the ration coupons. The Kandy case study showed that this control over the subsidy did not diminish under the food stamp scheme (see Appendix 5).

If the argument about moral obligations is valid, then it should have been valid under both policies, particularly when control over subsidies did not shift. This leaves the difficulties in imputing the real value of price subsidies to the households as the primary reason for the difference in the results for the two subsidy schemes. The free rice given on ration each week, which formed the largest part of the subsidy received by low-income households during 1978/79, lacked a clear reference price because its quality was different from that of the rice available in the market. The rationed rice was often reprocessed. The processing costs increased the quality perceived by households. This makes the real economic value of rice rations difficult to calculate. In this study, the monetary value of the rice subsidy was cal-

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[49] Note that:

$$\beta_1 Y = \beta_1[(Y - S) + S], \text{ and}$$

$$\begin{aligned}\delta Y^2 &= \delta_{11}(Y - S)^2 + \delta_{12}(Y - S)S + \delta_{22}(S)^2 = (\delta_{12}/2)(Y - S)^2 + \delta_{12}(Y - S)S + (\delta_{12}/2)(S)^2 \\ &= (\delta_{12}/2)[(Y - S)^2 + 2(Y - S)S + S^2] = (\delta_{12}/2)[(Y - S) + S]^2 = (\delta_{12}/2)Y^2.\end{aligned}$$

[50] Senauer and Young, "The Impact of Food Stamps."

Table 31—Tests for differences in marginal propensities to consume calories out of subsidy income and all other disposable incomes, 1978/79 and 1981/82

	1978/79	1981/82
Under the model		
Marginal propensity to consume calories		
Subsidy income	27.8 calories	10.8 calories
Other expenditures	10.0 calories	7.5 calories
R^2	0.83	0.81
Number of households	2,770	3,065
Under the hypothesis (H_o)		
Marginal propensity to consume calories		
Total expenditures	10.8 calories	7.4 calories
R^2	0.79	0.81
Number of households	2,770	3,065
Test		
F^*	216	0
$F_3^{0.05}$, N-7	2.60	2.60
Result of test	Reject H_o	Cannot reject H_o

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The marginal propensities are calculated at the mean of the lower 60 percent of expenditure range. The model and H_o are defined in the text.

Table 32—Tests for differences in marginal propensities to spend on food out of subsidy income and all other disposable incomes, 1978/79 and 1981/82

	1978/79	1981/82
Under the model		
Marginal propensity to spend on food		
Subsidy income	0.78	0.72
Other expenditures	0.59	0.68
R^2	0.89	0.92
Number of households	2,770	3,065
Under the hypothesis (H_o)		
Marginal propensity to spend on food		
Total expenditures	0.60	0.73
R^2	0.88	0.92
Number of households	2,770	3,065
Test		
F^*	83.5	0
$F_3^{0.05}$, N-7	2.60	2.60
Result of test	Reject H_o	Cannot reject H_o

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The marginal propensities are calculated at the mean of the lower 60 percent of expenditure range. The model and H_o are defined in the text.

Table 33—Estimates of the influence of different sources of income on total calories consumed, and on total food expenditures, 1978/79 and 1981/82

Explanatory Variable	Total Calories Consumed				Total Food Expenditures			
	CFS 1978/79		CFS 1981/82		CFS 1978/79		CFS 1981/82	
	Model	Hypothesis	Model	Hypothesis	Model	Hypothesis	Model	Hypothesis
Intercept	-38.5 (0.21)	-292.0 (1.6)	-286.177 (1.5)	-438.340 (2.6)	0.378 (0.06)	-4.05 (0.75)	-17.278 (1.9)	-30.478 (3.7)
Subsidy	21.63 (7.5)	. . .	8.309 (4.0)	. . .	0.771 (8.1)	. . .	0.533 (5.1)	. . .
Subsidy squared	0.0835 (10.72)	. . .	-0.0027 (1.1)	. . .	0.0001 (0.71)	. . .	-0.00001 (0.08)	. . .
Net expenditures	11.84 (24.2)	. . .	8.182 (27.0)	. . .	0.647 (39.6)	. . .	0.728 (49.0)	. . .
Net expenditures squared	-0.0005 (2.0)	. . .	-0.0005 (4.2)	. . .	-0.00004 (4.5)	. . .	-0.00003 (5.0)	. . .
Subsidy × net expenditures	-0.0151 (6.0)	. . .	0.0033 (2.4)	. . .	-0.00003 (0.4)	. . .	-0.00002 (3.3)	. . .
Total expenditures	. . .	12.62 (24.4)	. . .	8.340 (28.0)	. . .	0.667 (42.0)	. . .	0.736 (50.0)
Total expenditures squared	. . .	-0.0017 (5.9)	. . .	-0.0004 (3.5)	. . .	-0.00005 (6.0)	. . .	-0.00002 (4.0)
Household size	437.3 (17.4)	644.8 (25.6)	362.953 (13.3)	406.519 (18.4)	8.27 (9.9)	10.12 (13.0)	10.394 (8.0)	10.647 (10.0)
R^2	0.83	0.79	0.81	0.81	0.89	0.88	0.92	0.92
Number of households	2,770	2,770	3,065	3,065	2,770	2,770	3,065	3,065

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The t-ratios are given in parentheses.

culated by multiplying the amount of rice received under the rationing scheme by the unit price of rice purchased by the same households in the open market. However, the value of the food subsidies perceived by different households may have been quite different from the estimated values. The food stamp scheme does not give rise to these imputational problems. Given these problems with properly evaluating the food subsidy during the period when rice was rationed, the results suggesting differences in the impact of the forms of income appear to be ambiguous.

The Effect of Food Stamps on Calorie Consumption

To evaluate the nutritional effects of income transfers through food stamps, the expenditure elasticity of demand for calories and the change in calories given a 1 rupee change at the margin in per capita expenditures were derived from the following calorie consumption function estimated using data from CFS 1981/82 (see Table 34).

$$\begin{aligned} \text{LPCCALS} = {} & \underset{(2)}{-0.649} + \underset{(25)}{2.4439}\,(\text{LPCEXP}) \\ & - \underset{(18)}{0.1665}\,(\text{LPCEXP})^2 \\ & - \underset{(6)}{0.0451}\,(\text{LHHSIZE}); \qquad (10) \end{aligned}$$

$R^2 = 0.72$;

where

LPCCALS = natural log of per capita daily calorie consumption,

Table 34—Contribution of food stamps to the calorie consumption of recipients, by expenditure quintile, 1981/82

Per Capita Expenditure Quintile	Per Capita Expenditures	Calorie Consumption	Expenditure Elasticity for Calories	Marginal Calorie Consumption[a]	Food Stamp Value
	(Rs/month)	(calories/capita/day)		(calories/capita/day)	(Rs/month)
1	130	1,364	0.84	8.6	18.43
2	199	1,915	0.67	6.5	18.89
3	260	2,296	0.56	5.0	16.99
4	345	2,745	0.49	3.7	17.00
5	570	3,390	0.17	1.4	17.25

Per Capita Expenditure Quintile	Additional Calories from Food Stamps	Share of Calories from Food Stamps in Total Calories	Cost of 100 Calories from Food Stamps	Quintile's Share of Food Stamp Outlays	Calorie Adequacy Ratio[b]
	(calories/capita/day)	(percent)	(Rs)	(percent)	
1	159	11.6	0.38	38.4	0.62
2	122	6.4	0.52	28.4	0.8
3	85	3.7	0.66	17.8	1.04
4	63	2.3	0.90	11.1	1.24
5	24	0.7	2.39	4.1	1.54

Source: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

Note: The 1st quintile had the smallest expenditures; the 5th had the largest.

[a] This is the number of additional calories when Rs 1 is added to monthly per capita total expenditures.

[b] The calorie adequacy ratio is daily per capita calories divided by 2,200, where 2,200 is the national average per capita calorie requirement.

LPCEXP = natural log of per capita monthly total expenditure, and

LHHSIZE = natural log of household size.

(t-ratios are indicated within parentheses below the coefficients.) The estimates were restricted to those households receiving food stamps.

The expenditure elasticities of the bottom two quintiles indicate that they would increase calorie consumption by 7-8 percent if their disposable incomes increased by 10 percent. Targeting of income transfers to these groups would clearly increase the cost-effectiveness of the income transfer program. The data for marginal calories consumed reveal a similar story. Because of the combined effect of high expenditure elasticities and the low cost of the calories purchased by these low-income classes, the amount of additional calories consumed following a marginal (unit) increase in expenditures would be highest for these groups. The concept of marginal calories consumed can be used to estimate the net increment to calorie consumption brought about by food stamp incomes.

It was observed earlier that the marginal calories obtained through food stamp incomes would be the same no matter what the source of income. The marginal calories supplied from the total value of food stamp incomes, has been derived on this basis (Table 34). Accordingly, the average per capita income received through food stamps could have increased consumption by approximately 160 calories per day per person, or about 12 percent of the total average individual calorie consumption of the lowest quintile. As expenditures rise, calorie consumption tends to increase, total calories bought with food stamps decline, and so does the share of calories from food stamps. For example, the contribution of calories from food stamps to total calories declines from 11.6 percent for the lowest quintile to less than 0.7 percent for the highest. The effect of food stamps on calorie consumption is higher among calorie-deficient groups that allocate larger shares of their total expenditures to food consumption and that purchase relatively lower-cost calories than other groups. The nature of these relationships, and the lack of discrimination between households through the expenditure range that received food stamps, have resulted in substantial leakages and, therefore, high costs of improving the nutrition of the needy.

Cost-Effectiveness of Food Stamp Subsidy

The implicit costs of providing 100 calories through food stamps to each expenditure class, shown in Table 34, clearly point to the increasing unit costs as household expenditures increase. These higher unit costs are brought about by the decreasing allocations for food out of additional income or, conversely, by increasing allocations out of food stamps to nonfood consumption and by a preference for higher-cost calorie sources, as household expenditures increase. The average (weighted) cost of supplying 100 calories through food stamps thus works out to 69 cents for the highest expenditure class, compared with only 38 cents to provide a similar amount of calories to the lowest expenditure class. This only crudely approximates the cost-ineffectiveness of the food stamp scheme, if its objective is to increase the calorie consumption of the needy.

Assuming that the people at greatest nutritional risk are concentrated in the bottom 20 percent of the population, the relative costs indicate a much lower degree of cost ineffectiveness. The Treasury spends 98 cents for each 100 calories provided through the food stamp scheme to the intended target group.[51] This is over 250 percent of the actual cost of 38 cents per 100 calories. The cost of the leakage is clearly large.

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[51] The total food stamp outlay of Rs 1,660 billion amounts to Rs 4,547,945 per day. During 1981/82, recipients in the lowest quintile purchased 462,998,063 calories per day with their food stamp receipts.

Options for Modification

Table 35 shows the effect of food stamp allocations on average consumption of the poorest 20, 30, and 40 percent of the households. This information provides a basis for comparison of the potential effect of a reallocation of the total food stamp outlay that would minimize leakages. The food stamp outlay considered is Rs 1,700 million, the actual amount spent on the food stamp scheme after the number of recipients was frozen. Three options are considered for the reallocation simulation. ~~Under~~ Option A the total outlay would be allocated only among the poorest 20 percent. Option B would be to restrict food stamps to the poorest 30 percent only, and under Option C food stamps would be allocated to the poorest 40 percent. The simulations of the effects of the three scenarios are shown in Table 36.

Option A would have the greatest benefit for the households experiencing most serious calorie deficiencies. The new per capita food stamp allocation would be Rs 38.50, which is an additional Rs 20.00 to per capita incomes from the current value. Food stamps would account for 25.6 percent of the new income brought about by this change, whereas before the change food stamps contributed only 14 percent of total expenditures (Table 35). This might raise total consumption due to food stamps to 330 calories per capita per day, a net addition of 172 calories to consumption under the current food stamp scheme. This addition would increase total consumption from 1,368 calories to 1,540. Calories from food stamps would constitute 21.4 percent of the total. The calorie additions almost double the benefits from food stamps. Such consumption by the bottom 20 percent would be about 70 percent of the recommended daily average allowance of 2,200 calories.

As households are added under Options B and C, the per capita value of food stamp receipts and nutritional benefits decline. For example, if the entire bottom 30 percent is included, as in Option B, the contribution of calories from food stamps to total calories consumed by the lowest quintile falls to 16 percent, and calorie adequacy falls to 66 percent. Food stamp benefits for the poorest 20 percent are reduced further by Option C. As households in higher income groups are included, the cost of providing calories to the most needy will increase because the marginal propensity to consume calories out of additional incomes is lower for the higher-income households. The inverse relationship between income and the marginal propensity to consume food also means that removing current benefits will have less of an effect on food consumption by the richer households.

For example, consider the observed calorie consumption of 1,915 calories by stamp recipients in the second quintile of the expenditure distribution (Table 34). If these groups did not get food stamps, the reduction in calories would be 6 percent, compared with a reduction of 11 percent for the bottom quintile under similar conditions. Removal of food stamps from the second quintile during 1981/82 would have allowed them to consume 82 percent of the recommended allowance, compared with 87 percent with stamps. For the bottom quintile, the reduction would be from 62 percent to 55 percent of the recommended allowance. If current benefits are removed, the poor will face larger absolute reductions in calorie intake, as indicated by their higher marginal propensities to consume calories. Their relative reductions will also be large because their calorie intake is already low. It is evident from Table 34 that removal of food stamps from higher income groups would have only a minimal effect on their calorie consumption.

Targeting Implications: What Calorie Goals?

For income transfers to be meaningful, some specification of the expected nutritional goals may be warranted.

Typically, the allowances of calories recommended by the Food and Agriculture Organization of the United Nations and the World Health Organization (FAO/WHO) are used, after adjustments are made to cover local conditions, as the basis for deter-

Table 35—Effects of food stamp allocations on the poorest 20, 30, and 40 percent of households, 1981/82

Share of Households	Per Capita Expenditures	Food Stamps Per Capita		Calorie Consumption	Marginal Calories Consumption[a]	Calories from Food Stamps		Calorie Adequacy Ratio[b]
		Value	Share of Per Capita Expenditures			Number	Share of Total Calories	
	(Rs/month)		(percent)	(calories/capita/day)			(percent)	
Poorest 20 percent	130	18.43	14.0	1,368	8.60	159	11.6	0.62
Poorest 30 percent	146	18.48	12.6	1,496	8.03	148	9.8	0.68
Poorest 40 percent	162	18.64	11.5	1,616	7.47	139	8.6	0.73

Source: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

[a] Based on the calorie consumption relationships reported above.

[b] The calorie adequacy ratio is daily per capita calories divided by 2,200, where 2,200 is the national average per capita calorie requirement.

mining which groups are malnourished. Average per capita energy requirements based on the FAO/WHO recommendations are matched with apparent per capita intake of calories. Those consuming less than the average are considered to be malnourished.

Sukhatme has argued that it is unrealistic to believe that there is a universal, unvarying calorie standard, even after age, sex, and activity are taken into account.[52] To compare energy intake directly with a recommended allowance implies that intake

Table 36—Effects of reallocating the food stamp budget under different targeting options

	Poorest 20 Percent			Poorest 30 Percent			Poorest 40 Percent		
	A	B	C	A	B	C	A	B	C
Per capita expenditures (Rs/month)	150.00	138.50	131.50	...	154.50	147.50	...	...	163.40
Per capita availability of food stamps									
Value (Rs/month)	38.50	27.00	20.00	...	27.00	20.00	...	...	20.00
Share of per capita expenditures (percent)	25.60	19.50	15.20	...	17.50	13.50	...	...	12.20
Calories consumed (calories/capita/day)	1,540	1,441	1,381	...	1,564	1,508	...	...	1,626
Calories from food stamps									
Number (calories/capita/day)	331	232	172	...	216	160	...	...	149
Share of total calories (percent)	21.40	16.00	12.40	...	13.80	10.60	...	...	0.09
Net addition to calories consumed (calories/capita/day)	172	73	13	...	68	12	...	...	10
Calorie adequacy ratio[a]	0.70	0.66	0.63	...	0.71	0.68	...	...	0.74

Notes: Under Option A Rs 1,700 million is allocated only among the poorest 20 percent. Under Option B, Rs 1,700 million is allocated only among the poorest 30 percent. Under Option C, Rs 1,700 million is allocated only among the poorest 40 percent.

[a] The calorie adequacy ratio is daily per capita calories divided by 2,200, where 2,200 is the national average per capita daily requirement.

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[52] P. V. Sukhatme, *Malnutrition and Poverty: Ninth Lal Bahadur Shastri Memorial Lecture* (New Delhi: Indian Agricultural Research Institute, 1977).

does not vary for an individual or between individuals. But there are mechanisms within an individual that regulate moderate variations in intake without changes in weight or activity, if the variations are not sustained for long. Measurement of these processes is complicated and may not be useful when large populations are considered. Although variations between individuals need to be recognized, one needs to be cautious when interpreting low calorie consumption among low-income households. The income-consumption relationship has to be distinguished from the variations between individuals due to requirements.

The use of a statistical approach has been suggested to determine a minimum intake as a cutoff point for determining the nutritionally deprived. One could consider this minimum to be two standard deviations below the mean of the average recommended intake. For example, given a population of healthy individuals, and assuming a normal distribution of intake among them, the intake of 95 percent of such individuals can be expected to be within the interval $\mu \pm 1.96\,\sigma$, where μ is the mean intake level, and σ is the standard deviation. Sukhatme has suggested this standard deviation could be 375 calories. If the mean adult equivalent calorie requirement is 3,000 calories, the minimum cutoff point based on these statistical criteria would be 2,250 calories for an adult male with moderate activity. For precise use of this methodology, a knowledge of the joint distribution of the calorie intake and requirements of individuals is essential.

In 1974, FAO introduced a new concept based on physiological considerations for deriving a minimum critical calorie intake. The new minimum became one and a half times the basal metabolic rate less 20 percent to account for variations between individuals in the basal metabolic rate. This minimum limit ranges between 1,486 and 1,631 calories in 58 developing countries.[53]

Sukhatme has also suggested that the coefficient of variability may be 12-15 percent of the average requirement and that individuals may adapt to intakes as low as 30 percent below that requirement or as high as 30 percent above it without serious harmful effects.[54] Translated to a recommended average calorie intake of 2,200, this allows a lower limit of 1,540 calories and an upper limit of 2,860 calories. The value of these lower bounds of basic energy requirements was demonstrated further through a study using a behavioral approach based on the revealed preferences of consumers. Monitoring of income-induced shifts from "quantity" to "quality" considerations in the choice of food in Indonesia, Peru, Brazil, and Sri Lanka has revealed that perceived basic energy adequacy appears to occur within a range of 1,500 to 1,900 calories.[55]

Precise energy requirements are yet to come from nutritional science. However, the above discussion provides an indication that food-related government transfers should try to ensure that average calorie consumption among low-income households is not less than a basic minimum of 1,500 calories. This is only 68 percent of the average recommended per capita allowance of 2,200 calories. A goal of 80 percent of the recommended allowance will have to ensure that per capita consumption averages 1,760 calories. Data from CFS 1981/82 showed that at least 150 more calories are required, on the average, for the lowest quintile to reach such a critical basic minimum. From the point of view of nutritional equity, higher goals are desirable but require more resources, the allocation of which will have to take into consideration both short- and long-run opportunity costs.

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[53] Food and Agriculture Organization of the United Nations, *The Fourth World Food Survey* (Rome: FAO, 1977).

[54] Sukhatme, *Malnutrition and Poverty.*

[55] Neville Edirisinghe and Thomas T. Poleman, "Behavioral Thresholds as Indicators of Perceived Dietary Adequacy or Inadequacy," International Agricultural Economics Study 17, Cornell University, Ithaca, N.Y., July 1983.

9

THE NUTRITION OF CHILDREN AND INCOME TRANSFERS

Neither the current food stamp scheme nor the former price subsidy scheme has had any explicit objectives for child malnutrition. However, the operational aspects of both transfer schemes contain elements that appear to be related directly to the nutritional welfare of children. The option to have a food stamp scheme rather than a direct cash transfer scheme, inclusion of infant milk foods in the bundle of foods that food stamps can purchase, and the issue of the stamps with the highest value to children appear to be steps taken to ensure that children will benefit most from the food stamp scheme.[56] A feature of the earlier scheme was the price subsidy on infant milk foods. This subsidy was allowed to remain, at least partially, for a few years after the major price restructuring in the early 1980s.

As shown earlier, households do not view food stamps as different from any other form of income. Giving higher-valued food stamps to children thus would only increase the food stamp receipts of households qualified to receive food stamps and having large numbers of children. The effects on children would depend on the manner in which the household budget is distributed among members of the household. Low-income households allocate most of the additional income to food consumption. The effects of income transfers on child nutrition may be expected to be highest among these households, provided that food distribution within the household is equitable.

The proportions of children with Z-scores less than −2.0 in the case of height-for-age and weight-for-height can be used to reflect protein and calorie malnutrition among preschool children.[57] The Z-score, used for standardizing a distribution, is defined as follows:

$$Z = Mo - Me/SDe \tag{11}$$

where

Mo = the observed measurement—for example, height or weight—of individuals in a given age or height group;

Me = the expected measurement—for example, median of the reference population; and

SDe = the standard deviation of the reference population distribution.

Notwithstanding some of the problems associated with the quantification of the problem of child malnutrition, the overall proportions of preschool children with Z-scores less than −2.0 provide reasonable evidence child nutrition in Sri Lanka is a matter to be concerned with.[58] More importantly, the evidence that lower-income households contain most malnourished children is sufficient justification for examining the role of income transfers in the nutritional welfare of children (Table 37).

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[56] One apparent justification for the food stamp scheme was that more food for the family, and in particular for children, would be purchased than under a cash transfer program because the food stamps would be in the custody of the housewife (Sri Lanka, Department of the Food Commissioner, personal communication from the Food Commissioner, 1984).

[57] See World Health Organization, *Measuring Change in Nutritional Status* (Geneva: WHO, 1983).

[58] For a discussion of these issues and determinants of child nutrition in Sri Lanka, see Neville Edirisinghe, "Determinants of Nutritional Welfare Among Preschool-Aged Children in Sri Lanka," paper presented at the proceedings of the Seminar on Nutritional Status and Socioeconomic Survey, Food and Nutrition Policy Planning Division, Ministry of Plan Implementation, Sri Lanka, February 1984 (mimeographed).

Table 37—Share of preschool-aged children nutritionally at-risk, by expenditure quintile, 1980-82

Per Capita Expenditure Quintile	Share Having Height-for-Age Z-Scores Less Than −2.0	Share Having Weight-for-Height Z-Scores Less Than −2.0
	(percent)	
1	49.2	14.9
2	36.7	11.0
3	31.7	13.9
4	30.3	9.5
5	22.0	8.6
All	33.4	11.5

Source: Estimated using raw data from the Nutritional Status and Socioeconomic Survey 1980-1982 conducted by the Food and Nutrition Policy Planning Division of the Ministry of Plan Implementation, Sri Lanka.

Notes: The Z-score is

$$Z = (M_o - M_e)/SD_e,$$

where M_o is the observed height or weight of individuals in a given age or height group, M_e is the expected median height or weight of that group of the reference population, and SD_e is the standard deviation of the measurements for that group of the reference population.

Household resources affect the nutritional status of children through a number of channels, foremost of which is the supply of food for consumption by children. In general, one may expect a positive relationship between the amount of household resources and the amount of food children consume. But this relationship may be weakened by insufficient knowledge of the nature and amount of nutrients required by children for satisfactory growth. It may also be weakened by poor knowledge of how children's diseases affect their nutrition. This may be compounded by strong traditions and beliefs that restrict the types and quantities of food given to children.

The household survey from the Kandy district collected food consumption data from households pertaining to preschool children (see Appendix 5). The following discussion of the effects of income transfers is based on these data.[59]

Table 38 provides an indication of the relationship between the size of the shortfall of children's energy intake from the recommended allowances and their identification as nutritionally at risk. Preschool children with low calorie adequacy ratios—defined as the ratio of apparent energy intake to the energy allowance recommended for their age and sex—appear to have a higher risk of being malnourished than those who have higher calorie adequacy ratios. The table shows a negative relationship between the calorie adequacy ratio and the percentage with Z-scores less than −2.0 for all three indicators, height-for-age, weight-for-height, and weight-for-age.

Although food stamps are issued to individuals in a family, they are controlled either by the male head of the household or by the spouse. Food stamps are thus treated as additional income to the household as a whole. Whether incomes from food stamps, being directly related to food, have a larger effect on household nutrition than other forms of income was examined using Kandy survey data, but the test failed to provide statistical evidence of differences in impact.[60] This implies that any positive effect of the food stamp scheme on the nutritional welfare of children should operate through the effect of income on food consumption.

Data from the Kandy survey allow us to examine the effect of food stamp incomes on the calorie consumption of the members of stamp-receiving households divided into two groups: preschool children and all other members of the recipient households. Data on calorie consumption by preschool children and the entire household were collected separately. The number of calories

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[59] A complete analysis of Kandy survey data related to child nutrition is found in Neville Edirisinghe and Nimal Hettiaratchi, "Child Nutrition and Its Determinants Including Government Transfers and Intrafamilial Food Allocations: Evidence From the Kandy District, Sri Lanka," International Food Policy Research Institute, Washington, D.C., June 1986 (mimeographed).

[60] The same statistical model discussed in Chapter 8 was tested using data from the Kandy survey.

Table 38—Share of children nutritionally at-risk, by adequacy of calorie consumption, Kandy district, 1984

Ratio of Calorie Adequacy	Share of All Children	Share Having Height-for-Age Z-Scores Less Than −2.0	Share Having Weight-for-Height Z-Scores Less Than −2.0	Share Having Weight-for-Age Z-Scores Less Than −2.0
			(percent)	
Less than 60 percent	44.4	41.5	14.9	43.6
Between 60 and 80 percent	25.9	36.4	10.9	34.5
Greater than 80 percent	29.7	25.4	6.3	23.8

Source: Estimated from a survey of 480 households from the Kandy district conducted in 1984 by the International Food Policy Research Institute and the Food and Nutrition Policy Planning Division of the Ministry of Plan Implementation, Sri Lanka.

Notes: The Z-score is

$$Z = (M_o - M_e)/SD_e,$$

where M_o is the observed height or weight of individuals in a given age or height group, M_e is the expected median height or weight of that group of the reference population, and SD_e is the standard deviation of the measurements for that group of the reference population.

consumed by all other members was estimated by subtracting the calories consumed by preschool children from total household calories. These data were used to estimate calorie consumption functions for the two groups separately and to examine the effect of food stamps on the consumption of calories through their effect on income. (Children less than one year of age were excluded from this analysis due to the difficulties in accounting for nutrient intake from breastfeeding.)

The calorie consumption functions estimated for preschool children and all other members in households receiving food stamps are given in Table 39.[61] The t-ratios related to coefficients in the regression for preschool children show that the only significant variables explaining the calorie consumption of preschool children are per capita expenditures and the birth order of the child. The age variable can also be treated as being significant at a lower level of confidence.

Data on the effect of food stamp incomes on the calorie consumption of preschool children and all other members in households receiving stamps are presented in Table 40. Households in the lowest two quartiles of the expenditure distribution receive 11.8 percent and 10.3 percent, respectively, of their total disposable incomes from food and kerosene stamps. These estimates, however, may be biased upward because of the underestimation of total expenditures discussed earlier. This bias will not affect the relation between the expenditure elasticities of the two consumer groups within the households. The overall average contribution of food stamps to recipient household expenditures is 7 percent. In this context, it should be noted that the value of the kerosene stamp was increased by over 100 percent during 1984 while no change occurred in the food stamp entitlement.

A noteworthy characteristic of the expenditure elasticities estimated from calorie consumption functions is that the elasticities for the all other members category are higher than the elasticity estimates for preschool children. This difference in the calorie response to expenditure changes is

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[61] In the regressions reported in Table 39, the natural log of the expenditure variable is used as an explanatory variable, giving a semi-log functional form for the consumption function. It allows the marginal propensities (MPC) and calorie elasticities with respect to expenditures to decrease with increasing expenditures and calorie consumption. These properties conform to expectations in consumption behavior and this functional form provided the best "fit" for the data in use.

Table 39—Estimates of the calorie-consumption function for preschool children and for other members of households receiving food stamps, Kandy district, 1984

Explanatory Variables	Preschool Children	Other Members
Intercept	617.26 (0.98)	−3,598.80 (2.10)
Log of per capita expenditure	286.56 (2.52)	1,099.60 (3.50)
Household size	. . .	−81.60 (1.46)
Mother's education	−2.65 (0.23)	. . .
Age of child	3.98 (1.40)	. . .
Birth order of child	−38.96 (1.94)	. . .
Child dependency ratio[a]	−1.18 (0.64)	2.74 (1.46)
R^2	0.20	0.17

Source: Estimated from a survey of 480 households from the Kandy district conducted in 1984 by the International Food Policy Research Institute and the Food and Nutrition Policy Planning Division of the Ministry of Plan Implementation, Sri Lanka.

Notes: The dependent variable is calories per child or other member per day. The t-ratios are given in parentheses.

[a] The child dependency ratio is the ratio of the number of children less than 14 years of age to the number of all other members of the household.

largest in the lowest expenditure quartile. A 10 percent increase in expenditures in this range may lead to a 9.3 percent increase in all other members' calorie consumption compared with a 4.4 percent increase for the preschool children. Beyond the first quartile, the gap in the calorie elasticities begins to narrow.

These elasticities, when related to the marginal increases in expenditures following receipt of food stamps, provide an indication of the contribution of food stamp incomes to the calorie consumption of the two groups. Food stamps received in the household appear to have increased the calorie consumption of preschool children by 5.4 percent and the calorie consumption of all others by 10.9 percent among households in the lowest quartile. As expenditures increase, the contribution of food stamps to the calorie consumption of the two groups tends to decrease.

Intrahousehold food distribution patterns were examined further after the calorie consumption of the two groups were standardized, using adult equivalent scales.[62] A few important consumption relationships emerge from this information, shown in Table 41. First is the resource-induced increases in the per adult equivalent calorie consumption of both preschool children and all other members. Second is that the difference in

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[62] Intrafamilial food distribution issues related to Sri Lankan households are discussed in Neville Edirisinghe, "Intrafamily Food Distribution and Child Malnutrition: A Case Study from Sri Lanka," International Food Policy Research Institute, Washington, D.C., 1986 (mimeographed); and in Neville Edirisinghe and Nimal Hettiaratchi, "Child Nutrition and Its Determinants." For a discussion of the general issues related to this subject, see Beatrice L. Rogers, "The Internal Dynamics of Households: A Critical Factor in Development Policy," U.S. Department of Agriculture, Washington, D.C., 1983 (mimeographed); and E. G. Piwoz and Fernando E. Viteri, "Studying Health and Nutrition Behaviour by Examining Household Decisionmaking, Intra-household Resource Distribution, and the Role of Women in These Processes," *Food and Nutrition Bulletin* 7 (December 1985): 1-31.

Table 40—Characteristics of households receiving food stamps and the effects of food stamps on the calorie consumption of preschool children and other households members, by expenditure quartile, Kandy district, 1984

Per Capita Expenditure Quartile	Total Expenditures	Household Size	Food Stamp Value		Food Stamps as Share of Total Expenditures
			Total	Per Capita	
	(Rs/month)		(Rs/month)		(percent)
1	900	7.17	107.43	14.24	11.8
2	934	6.20	96.56	15.61	10.3
3	1,396	6.30	88.65	14.00	6.4
4	2,169	6.69	92.08	13.76	4.2
All	1,343	6.56	96.18	14.66	7.2

Per Capita Expenditure Quartile	Calorie Consumption		Expenditure Elasticities for Calories		Calories from Food Stamps	
	Preschool Children	Other Household Members	Preschool Children	Other Household Members	Preschool Children	Other Household Members
	(calories/capita/day)				(percent)	
1	623	1,176	0.45	0.93	5.4	10.91
2	622	2,129	0.45	0.51	4.7	5.25
3	838	2,065	0.34	0.53	2.2	3.39
4	898	2,243	0.31	0.48	1.3	2.01
All	744	1,913	0.38	0.57	2.7	4.10

Source: Estimated from a survey of 480 households from the Kandy district conducted in 1984 by the International Food Policy Research Institute and the Food and Nutrition Policy Planning Division of the Ministry of Plan Implementation, Sri Lanka.

the calorie adequacy ratios of preschool children and all other members are large throughout the expenditure range. Third is that the rate of change in the calorie adequacy ratios in the two categories changes when moving to a higher level of resource availability.

In this instance, the calorie adequacy ratio of all other members improves by 28.6 percent when moving from the lowest expenditure quintile to the next. Between the same expenditure categories, the preschool children's calorie adequacy ratio rises only 6.4 percent. The increase for the former is nearly 450 percent of the latter.

It can be seen from Table 41 that all other members in the second quintile consumed around 83 percent of the recommended allowance of calories.[63] And the highest relative increase in the calorie adequacy ratio of preschool children occurs between expenditure quintiles 2 and 3. In other words, only after all other members achieve around 80 percent of calorie adequacy does the calorie consumption of preschool children increase significantly. This characteristic allows one to make an inference that when resources are in short supply, allocations within the family tend to favor the more productive members of the household. This behavior, perhaps, may be a part of a survival strategy rather than a reflection of a lack of knowledge of the nutritional requirements of the less productive member.

These results indicate that government transfers may affect groups or members of a household differently, although the overall

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[63] This increase was found to be significant at the 10 percent level of probability.

Table 41—Mean calorie adequacy ratios of preschool children and other members in households receiving food stamps, by expenditure quintile, Kandy district, 1984

		Preschool Children			Other Members		
Per Capita Expenditure Quintile	Per Capita Expenditure	Adult Equivalent Calorie Consumption	Calorie Adequacy Ratio	Increase from Preceding Expenditure Quintile	Adult Equivalent Calorie Consumption	Calorie Adequacy Ratio	Increase from Preceding Expenditure Quintile
	(Rs/month)	(calories/capita/day)		(percent)	(calories/capita/day)		(percent)
1	122	1,468	53.38	. . .	1,779	64.69	. . .
2	168	1,562	56.80	6.4	2,288	83.20	28.6
3	222	1,910	69.45	22.2	2,373	86.29	3.7
4	304	1,933	70.29	1.2	2,704	98.32	13.9
5	878	2,280	82.90	17.9	3,649	132.69	34.9
All	337	1,830	66.50	. . .	2,555	92.90	. . .

Source: Estimated from a survey of 480 households from the Kandy district conducted in 1984 by the International Food Policy Research Institute and the Food and Nutrition Policy Planning Division of the Ministry of Plan Implementation, Sri Lanka.

impact of food-related income transfers may not be any different from any other form of income. However, the results also suggest that apparent "discrimination" may not necessarily be "irrational." Income transfers may have a greater effect on preschool children if the transfers are large enough to ensure that a reasonable number of calories, such as 80 percent of the recommended allowance, is consumed by the more productive members of the household.

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POLICY IMPLICATIONS

This joint F&NPPD/IFPRI study was undertaken with the support of USAID to help the government of Sri Lanka assess the performance of the food stamp scheme and to explore whether modification of the scheme might raise its cost-effectiveness. This task was performed taking into consideration the overall economic policy reforms, of which changes in the subsidy scheme were an integral part.

The findings of this study point to two basic facts—that there has been a deterioration in the nutritional welfare of households in the lowest segment of the income distribution, and that a well-intended income transfer scheme has not been able to mitigate the effect of inflation on these households.

Nutritional Goals

Any income transfer program will require specific objectives. Enhancement of the general welfare of weaker sections may be a goal to be achieved through income transfers, but measurement of its success will face numerous problems. A nutritional goal, such as ensuring consumption of a given amount of energy, would avoid such problems. It may seem ideal to have a calorie goal to ensure that everyone gets the recommended energy allowances without a shortfall. But the resources required to achieve such a goal may be prohibitive. A calorie goal therefore has to consider the amount of resources available for diversion to consumption and at the same time avoid being self-defeating by focusing on a calorie standard lower than could be achieved. There is some evidence that the minimum critical average daily per capita requirement may be in the range of 1,500 to 1,800 calories.[64] The higher amount is preferable to the lower one because it would minimize the probability of counting out anyone who is truly at nutritional risk. The choice between the two calorie goals may be determined by the availability of resources. The crucial implication is that a reasonable calorie goal should be able to ensure at least 1,500 calories per capita per day to the recipients.

A simulation conducted using data from the 1981/82 survey showed that the calorie consumption of the bottom 20 percent could have been raised from the observed 1,364 calories to 1,540 calories per capita per day if the initial allocation of Rs 1.7 billion for food stamps was confined to this expenditure class. This could have resulted in these households' receiving Rs 38.50 per month in food stamps instead of the Rs 18.00 per month they usually received. Benefits given to additional households from higher expenditure classes obviously reduced the food stamp allocation for the lowest 20 percent, reducing the calorie contribution of food stamps. Based on the calorie consumption relationships observed during 1981/82, it was also seen that a removal of food stamp eligibility from the expenditure classes above the bottom 20 percent would not have seriously affected the consumption of the higher-income classes presently receiving food stamps.

The budgetary requirement for income transfers would thus depend on the calorie goals to be achieved through them and the degree to which targeting can be effective. For example, in 1981/82 a calorie goal of a minimum of 1,500 daily per capita calories would require transfer of about Rs 1.7 billion to the bottom 20 percent of households. A higher calorie goal, such as 2,200 calories—the recommended allowance of an average Sri Lankan—would have required that at least Rs 6.3 billion be transferred to households in the lower half of the income distribution. Such income transfers would have raised per capita monthly expenditures to about Rs 240, the level of expenditures at which households consumed about 2,200 calories per capita per day during 1981/82.

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[64] However, with the present state of knowledge on the nutritional requirements of individuals or households, any minimum calorie goal is to a degree arbitrary.

Criteria for Targeting

Whichever calorie goal is adopted, its realization would depend heavily on the efficiency with which income transfers are targeted. There is no unique criterion or formula that can be adopted to identify the intended beneficiaries.[65] There may be many options and a choice would depend on numerous considerations, such as the goals of the income transfers, the availability of resources, political feasibility, and economic and operational efficiency. The government of Sri Lanka has a clear policy of eliminating consumer food price subsidies and the rice rationing scheme.[66] This is an integral part of an overall policy of minimizing government intervention in the marketplace. The income transfer program has to be modified within this framework. One option is to relate eligibility to observable manifestations of malnutrition. Malnutrition manifests itself in individuals in biology and behavior. For example, it can reduce growth of height and body mass, hinder mental development, and limit activity. The outcome variables of malnutrition that can be easily identified and measured are anthropometric and child-related. The most commonly used anthropometric indicators are the heights and weights of children, which are compared against indicators from a healthy reference population to determine the degree to which protein-calorie malnutrition may have hampered growth. Households with malnourished children, as determined by given anthropometric or other medically determined criteria, may be a target population for income transfers.[67] Although targeting based on anthropometrically determined child malnutrition appears to be advantageous operationally, it may contain a large number of disadvantages. The main disadvantage is that it is child-specific and requires screening of all children to identify the ones who are nutritionally at risk. This would leave out all other households without preschool children, even though some may be nutritionally at risk.

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[65] Different countries have adopted different targeting criteria. Their success or failure largely depends on conditions and circumstances in that country. A useful summary of these experiences can be found in Beatrice L. Rogers, "Design and Implementation Considerations for Consumer Food Price Subsidies," paper presented at the Conference on Consumer-Oriented Food Subsidies sponsored by the International Food Policy Research Institute, Chiang Mai, Thailand, November 13-15, 1984 (mimeographed); and in Per Pinstrup-Andersen and Harold Alderman, "The Effectiveness of Consumer Food Subsidies in Reaching Rationing and Income Transfer Goals," paper presented at the Conference on Consumer-Oriented Food Subsidies, Chiang Mai, Thailand November 13-15, 1984 (mimeographed).

[66] The issue of limited quantities of staples at subsidized prices is existent in the neighboring countries such as India, Pakistan, and Bangladesh; Egypt, which has a comprehensive food price subsidy program, also has rationing of some foods at subsidized prices. See Shubh Kumar, *Impact of Subsidized Rice on Food Consumption and Nutrition in Kerala,* Research Report 5 (Washington, D.C.: International Food Policy Research Institute, 1979); Beatrice L. Rogers and F. J. Levinson, "Subsidized Food Consumption in Low-Income Countries: The Pakistan Experience," International Nutrition Planning Program Discussion Paper 13, Massachusetts Institute of Technology, Cambridge, Mass., 1979); Raisuddin Ahmed, *Foodgrain Supply, Distribution, and Consumption Policies Within a Dual Pricing Mechanism: A Case Study of Bangladesh,* Research Report 8 (Washington, D.C.: International Food Policy Research Institute, 1979); and Harold Alderman, Joachim von Braun, and Sakr Ahmed Sakr, *Egypt's Food Subsidy and Rationing System: A Description,* Research Report 34 (Washington, D.C.: International Food Policy Research Institute, 1982).

[67] The food stamp scheme that operated in Colombia for a short time used child malnutrition as a component in its targeting strategy. It was restricted to certain regions. The program was terminated without a comprehensive evaluation. See Mario Ochoa, "The Colombian Food System: Design, Results, Nutritional Impact, and Political Constraints," International Food Policy Research Institute, Washington, D.C., 1984 (mimeographed).

Child malnutrition may not be related to income, either. This study, for example, found children that anthropometric indicators showed were malnourished throughout the income range. This implies that a decision on an income cutoff will be necessary if a limited allocation is to be distributed efficiently. Additional problems may arise out of the availability of many anthropometric indicators and the controversies that surround the choice of proper standards for comparing them. Targeting based on child malnutrition will require technical expertise and the involvement of personnel who are already engaged in child-related intervention programs. Integration of these personnel and child-specific programs into a potentially broad-based income-transfer program may reduce the efficiency of both types of programs. Even if some of these problems are resolved, a separate scheme will be required to address the problems of malnutrition among households that do not have children. If the objective of income transfers is not limited to reduction or elimination of child malnutrition, other options for targeting need to be considered.

Another option is to use the amount of easily assessable resources, such as landholdings, as a basis for targeting. In predominantly agricultural societies where input and output markets operate only minimally, amount of land or livestock may be a useful indicator of the nutritional welfare of households. It is unlikely that the situation in Sri Lanka would lend itself to the use of such indicators. Apparent malnutrition, whether seen through child-related indicators or through observed food consumption relative to minimum nutrient requirements, does not seem to be confined to certain geographical areas or to agricultural regions.[68] In addition, tangible assets, such as landholdings, may not generate income. Above all, in the rural sector, most of the nutritional problem is faced by the landless. Total wage earnings would be the more relevant criterion for them.

Income transfers could also be channeled through a scheme that provides self-targeting foods. These foods have negative income elasticities of demand. These are usually the less preferred starchy staples, such as yams, manioc, maize, and coarse grains. The higher the income, the lower their consumption. Lower-income households will benefit more by the provision of such foods than higher-income households, by their own choice.[69] This study observed that even in the rural sector in Sri Lanka, these foods are minimally consumed. To achieve nutritional goals through these foods will require significant changes in the preferences of households. Three decades ago, wheat flour would have been a suitable candidate for this option, but wheat is no longer considered an inferior food by most of the population. Even if wheat or any of its derivatives—which have to be totally imported—qualify, one has to consider the effects a wheat distribution scheme may have on domestic agricultural production and the food preferences of different groups.

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[68] This fact rules out the possibility of regional or zonal targeting of transfers. Targeting of food coupons to households in a few areas where poverty and malnutrition were relatively high was conducted on an experimental basis in a recent pilot project in the Philippines. Research on this pilot project has shown that the program has favorable effects on nutrition. However, it is yet to be seen how such targeting is to be operationalized to cover all other "poor" regions of the country. See Marito Garcia and Per Pinstrup-Andersen, "The Pilot Price Subsidy Scheme in the Philippines: Impact on Poverty, Food Consumption, and Nutritional Status," International Food Policy Research Institute, Washington, D.C., June 1986 (mimeographed).

[69] Gray has demonstrated how different income classes would gain or lose if the existing wheat subsidy in Brazil is changed to other commodities: if changed to cassava, for instance, the poor would gain and the rich might lose. See Cheryl Williamson Gray, *Food Consumption Parameters for Brazil and Their Application to Food Policy,* Research Report 32 (Washington, D.C.: International Food Policy Research Institute, 1982). In Egypt, the subsidy on wheat flour benefits the rural poor more than the urban poor. See Harold Alderman and Joachim von Braun, "Welfare and Distributional Impact of the Egyptian Food Ration and Subsidy System," International Food Policy Research Institute, Washington, D.C., September 1983. In Bangladesh, sorghum rather than rice and wheat would benefit the poor more. See Rezaul Karim, Manjur Majid, and F. James Levinson, "The Bangladesh Sorghum Experiment," *Food Policy* 5 (February 1984): 61-63. Kahn has observed in the study from Rawalpindi City that the type of subsidized wheat has been somewhat self-targeting since the rich preferred and could afford better quality wheat in the open market.

Another option for targeting is to have the community play an important role in determining the recipients of income transfers.[70] Briefly, a given community would be allowed to know who the claimants of the benefits are so that information on the economic status of the claimants known to other members of the community may be used to screen applicants. Such a strategy implies a high degree of awareness by a given community of socioeconomic status of the households belonging to the community and willingness by at least some to help in the screening. It also implies that households would be sensitive to the social stigma attached to a communally detected "fraudulent" practice. But the universal subsidy scheme in which the rich and poor participated for a long time may have diminished the social stigma attached to receiving public assistance. It will, therefore, require a large effort to teach the public that the income transfers are only meant for the really poor.

A prerequisite for success of this option is extensive participation by households in community and social affairs. Extensive participation by the people in the democratic process of representative government, the existence of a multiparty political system, relatively high literacy rates, and the existence of a competent public administration structure in Sri Lanka are conducive to successful operation of this strategy. This option may prove disadvantageous to those low-income households that are unwilling to participate in a program that exposes each claim to the community at large. Supplementary schemes, such as those based on observed child malnutrition, may help avoid the elimination of households that truly need assistance. For example, the health and medical authorities could be encouraged to recommend assistance to any deserving families not included in the relief program.

Likewise, the presently available information for each key region on household calorie deficiencies and child malnutrition could be compared with the shares of income transfers allocated to the regions under the new scheme. Specific information on the infant and maternal mortality rates in each region could also be used to compare apparent demand for and actual supply of income transfers. The government institution responsible for the actual operation of the income transfer scheme will require the assistance of all other government and nongovernment institutions working in health and nutrition. In this regard, a central agency such as the Food and Nutrition Policy Planning Division could coordinate the external information required to operate the income transfer program efficiently.

Modification Implications: Eligible Incomes

A reorganization of the present income transfer scheme to increase its efficiency will first require a decision on a new minimum household income for eligibility. The analysis in this study was based on total expenditures or disposable incomes rather than incomes per se. One strategy may be to use a new eligibility criterion based on disposable incomes and subsequently adjust it to reflect the usual underreporting of incomes to arrive at the required household income.

For example, if a decision to limit the food stamps to the bottom 20 percent is made, the household disposable income that would ensure calorie consumption similar to that observed in 1978/79 (around 1,500 calories) would be approximately Rs 850. This assumes a family of six and the consumption patterns observed under the new incomes and price structure in 1981/82. Considering that reported incomes in household surveys show that at least 10-15 percent of the underreporting of disposable incomes (total expenditures) is at the lower end of the income range, one may expect the reported income of the bottom 20 percent to be around Rs 750. Accordingly, the income cutoff point for eligibility could be placed at Rs 750. However, it should be noted that this is based on the 1981/82 income-price structure and consumption relationships, and that the expected calorie consumption is about 1,500 calories—approximately 70 percent of the recommended allowance.

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[70] Present plans to change the food stamps to "poor relief" is based on this option.

Modification Implications: Future Inflation

Finally, a modification of the present food stamp scheme has to consider the impact that future inflation may have on the real value of income transfers. It was observed that the real value of food stamps had almost halved between 1979 and 1982 in the absence of a mechanism to adjust for inflation. Effective targeting would be a prerequisite for indexing. Periodic examination of the income transfer program may be required for elimination of any unqualified recipients and to change the monetary value of the transfers to meet any erosion of their real value. Under the former rice rationing scheme, the transfer was automatically indexed when rationed quantities were not changed in response to price increases. This partly explains the popularity of the rice ration scheme. But a return to a rice rationing program as a self-indexed income transfer program appears to be incompatible with the current set of ongoing economic policies, which has internal and external trade liberalization as a mainstay. Public distribution of foodgrains usually requires a comprehensive network affecting producers, consumers, transportation, milling and processing, storage, wholesale and retail trading, and other aspects of the food economy.[71] Before reversing policies, the economic and social costs of the overall involvement should, ideally, be evaluated against alternative options that can achieve similar benefits.[72] The additional monetary and social costs of operating a rice rationing scheme as a self-indexed income transfer program may be more than the additional costs involved in having a direct transfer program indexed to open-market changes in rice prices. Indexation of the income transfers based on rice prices may or may not maintain the original value of the transfer. This study found no difference between food-related income transfers and any other form of income in their effects on food expenditures or consumption. Thus an overall cost-of-living index is the more relevant reference for making adjustments to maintain the real value. Indexation based on changes in rice prices has operational advantages because of ease with which rice price indexes can be computed. Indexing may require additional transfer allocations, but successful implementation of economic development programs and efficient supervision of the income transfer program would ensure that the share of the transfer program in public expenditures will not change significantly.

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[71] For a discussion of the operational and economic implications of public food distribution in Sri Lanka, see Edirisinghe and Poleman, "Implications of Government Intervention"; and Gavan and Chandrasekera, *The Impact of Public Foodgrain Distribution.* For a discussion of the negative effects on production, see D. R. Snodgrass, *Sri Lanka: An Export Economy or Transition* (Homewood, Ill.: Richard D. Irwin, Inc., 1966).

[72] Such an evaluation would also include an examination of the positive effects of market-determined prices on the growth of agricultural output. That prices may have played a significant role in increased paddy production is evidenced in a recent study on the supply response of paddy farmers. See Thorbecke and Svejnar, "Effects of Macroeconomic Policies." At the same time, high prices for the main staple may harm even farmers who are net purchasers if additional incomes to their households from better wages and more employment opportunities are insufficient to compensate for real income losses due to price increases. See Sahn, "The Effect of Price and Income Changes." It appears that suitable income transfers to such farmers would help increase their effective demand while maintaining price incentives for producers.

Child Nutrition and the Food Stamp Scheme

The findings about intrahousehold food allocation behavior have implications for the implicit objective of enhancing child nutrition through the food stamp scheme. Most apparent child malnutrition is found in low-income households, but older members take priority when incomes are transformed into food consumption. This apparent discrimination against younger members would diminish, however, if income transfers are large enough to meet at least 80 percent of the energy requirements of the more productive members of the household. In this regard, the earlier discussion of the minimum calorie goals finds further strength from intrahousehold food distribution patterns. If protein-energy malnutrition among preschool children is to be addressed through the food stamp scheme, the modifications discussed earlier would throw light on the implications for such an objective. The fundamental implication is that a sufficiently large income transfer to the households in the lowest quintile, in terms of the present fiscal allocation for the food subsidy, would require that the total allocation be transferred to the bottom quintile. Even if this could be accomplished, calorie adequacy, related to per capita consumption, may have been only about 70 percent, and that with 1981/82 prices. Thus limited income transfers, such as effected through present food stamps, may not adequately address the problem of child malnutrition. Such a program clearly needs to be complemented by other programs aimed directly at children.

Sri Lanka has had a large number of programs sponsored both by the government and nongovernment organizations specifically to address child welfare.[73] These include health services, both preventive and curative, and supplementary feeding programs using prepared weaning foods, such as Triposha. Although the size of the effects of each program may not be discernible, it is reasonable to conclude that the cumulative effect of all programs may have significantly contributed to child welfare as reflected in the infant mortality rates, which are lower than in many other countries. There appears to be no evidence yet to support an elimination of these child-specific intervention programs or even to reduce the intensity of current programs. This observation, of course, does not preclude any modifications to current programs to make them more cost-effective.

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[73] For a discussion of current child specific intervention programs, see Sri Lanka, Ministry of Plan Implementation, Food and Nutrition Policy Planning Division, "Nutritional Status, Its Determinants and Intervention Programs," Ministry of Plan Implementation, Colombo, 1983.

APPENDIX 1: SUPPLEMENTARY TABLES

Table 42—Number of members in households eligible to receive food stamps

Annual Household Income Per Year	Number of Members in the Household 5	6	7	8	9	10	11	12	13
(Rs)	(number eligible for food stamps)								
3,600 or less	Up to 5	6	7	8	9	10	11	12	13
3,601–4,320	None	1	2	3	4	5	6	7	8
4,321–5,040	None	None	1	2	3	4	5	6	7
5,041–5,760	None	None	None	1	2	3	4	5	6
5,761–6,480	None	None	None	None	1	2	3	4	5
6,481–7,200	None	None	None	None	None	1	2	3	4
7,201–7,920	None	None	None	None	None	None	1	2	3
7,921–8,640	None	None	None	None	None	None	None	1	2
8,641–9,000	None	None	None	None	None	None	None	None	1

Source: Sri Lanka Ministry of Plan Implementation, *Evaluation Report on the Food Stamp Scheme* (Colombo: Ministry of Plan Implementation, 1982), p. 4.

Table 43—Calorie consumption per adult equivalent, by expenditure decile and sector, 1978/79 and 1981/82

Per Capita Expenditure Decile	1978/79 Urban	1978/79 Rural	1978/79 Estate	1978/79 All	1981/82 Urban	1981/82 Rural	1981/82 Estate	1981/82 All
	(calories/adult equivalent unit/day)							
1	1,656	1,749	1,712	1,730	1,521	1,570	1,617	1,566
2	2,089	2,142	2,432	2,147	1,771	2,062	2,186	2,031
3	2,213	2,366	2,764	2,376	1,982	2,326	2,584	2,305
4	2,340	2,566	2,963	2,575	2,316	2,574	2,836	2,562
5	2,468	2,761	3,296	2,783	2,486	2,778	3,047	2,768
6	2,586	2,978	3,515	2,983	2,624	3,009	3,377	2,983
7	2,797	3,070	3,822	3,118	2,793	3,202	2,748	3,175
8	3,037	3,369	3,908	3,353	3,092	3,520	4,084	3,494
9	3,317	3,663	4,756	3,690	3,261	3,866	4,546	3,760
10	3,589	3,797	4,600	3,762	2,550	4,153	4,394	3,905
Average	2,755	2,784	3,546	2,852	2,796	2,823	3,344	2,855

Sources: Based on data from Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape); and Central Bank of Ceylon, "Consumer Finances and Socioeconomic Survey 1981/82," Central Bank of Ceylon, Colombo, n.d. (computer tape).

APPENDIX 2: DATA SOURCES

Most of the analysis in this study required comparing data from two time periods. This was greatly facilitated by the availability of two comprehensive household surveys conducted by the Central Bank of Ceylon—the two Consumer Finances and Socioeconomic Surveys of 1978/79 and 1981/82 (CFS 1978/79 and CFS 1981/82).[74] The comparability of the two surveys with regard to the conducting agency, survey design, sampling procedures and definitions, questionnaires and time coverage, provide a rare basis for a high degree of confidence in the variables from these surveys used in this study.[75]

The two surveys were planned and conducted by the Department of Statistics of the Central Bank with a large number of staff members planning, supervising, and working in the field for both. The sample design of the two surveys differed only minimally, without endangering comparability; concepts and definitions were also similar.[76] Both used almost identical questionnaires and data-gathering methodology to collect information on demographic characteristics, housing particulars, employment, food and nonfood expenditures, household incomes, savings, investments, and indebtedness. Each survey was planned to cover a sample of 8,000 households, with 2,000 households interviewed in each of the four survey rounds. The response rates were 99 percent for CFS 1981/82 and 95 percent for CFS 1978/79.

The four rounds were intended to capture seasonality effects. CFS 1978/79 was conducted from October 1978 to September 1979, mostly before the removal of price subsidies, most of which occurred during late 1979 and in 1980. The new food stamp scheme, however, was introduced in September 1979. The survey may reflect some effects of economic liberalization on income and commodity flows. The four rounds of CFS 1981/82 were begun in October 1981 and completed in September 1982. By the time this survey was carried out, consumption and expenditure patterns had probably adjusted to the initial shocks from the removal of price subsidies and to new income flows from economic policy changes.[77]

Most of this study used income and expenditure variables from the two surveys. When these data were obtained from the Central Bank, they had already been examined and cleaned for use in the World Bank-Central Bank of Ceylon Project on Evolution of Living Standards in Sri Lanka.[78] Data on income and expenditure had been collected for spending units, defined to consist of one or more persons who are members of the same household and share a major part of income and expenditure. These data were aggregated at the household level for this study. The aggregated data were scrutinized further and some apparent outliers were removed when household calorie consumption was estimated. The estimation procedures are described later in this appendix.

That a high degree of faith can be placed in the data of this survey is demonstrated by the close correspondence between national estimates of certain variables and the figures given in national accounts. The national accounts published for the calendar year were made comparable to survey accounts by taking weighted averages. The weights were 0.25 for the 1978 and 1981 accounts and 0.75 for the 1979 and 1982 accounts. Similar weights were used for population figures. The comparison showed that the weighted average of total food and kerosene stamps issued during 1981 and 1982 was Rs 1,660 million. The estimate from CFS 1981/82 was Rs 1,640 million. The estimated total food subsidy on rice, wheat, and sugar from CFS 1978/79 was 97 percent of the weighted average in the national accounts. The estimated daily per capita calorie availability from CFS 1978/79 was 2,283 calories and from CFS 1981/82, 2,271 calories. The National Food Balance Sheets show availability to have been 2,324 calories during 1978/79 and 2,191 calories during 1981/82. Estimates from the CFS surveys and the national accounts of annual per capita food and total consumption expenditures show the CFS survey estimates of food consumption expenditure to be 95.3 and 89.4 percent of the national accounts for 1981/82 and 1978/79 (see Table 44). CFS survey estimates of total private consumption were 78.2 and 73.2 percent of the national accounts figures for 1978/79 and 1981/82.

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[74] The author is indebted to the Central Bank of Ceylon for providing data requirements for this study.

[75] For a critical evaluation of these surveys, see S. Anand and C. Harris, "Living Standards in Sri Lanka, 1973-1981/82: An Analysis of Consumer Finance Survey Data," report prepared for the World Bank-Central Bank of Ceylon project on the Evolution of Living Standards in Sri Lanka, Oxford University, Oxford, U.K., April 1985 (mimeographed).

[76] Central Bank of Ceylon, *Report on the Consumer Finances and Socioeconomic Survey 1978/79;* and Central Bank of Ceylon, *Report on Consumer Finances and Socioeconomic Survey 1981/82.*

[77] The Central Bank's New Series of National Accounts uses 1982 as the base year. The major consideration for the choice of 1982 as the base year was that the structural changes in the economy flowing from the radical changes in economic and financial policies adopted in 1977 had stabilized by 1982 (Central Bank of Ceylon, *Annual Report 1982* [Colombo: Central Bank of Ceylon]).

[78] Anand and Harris, "Living Standards in Sri Lanka."

Table 44 points to an apparent larger underestimation of nonfood expenditures than of food expenditures in both CFS survey data. The 1981/82 data seem to have a larger underestimation than the 1978/79 data. These data are underestimated, however, only if it is assumed that the annual national accounts estimates and the weighted averages used in Table 44 are accurate.[79] A discussion on the estimation procedures adopted in deriving national accounts estimates is beyond the scope of this paper. As for the weighting procedures, Anand and Harris discuss the possible bias in estimates when weighting has to be done simply in the absence of quarterly estimates.[80] However, the observation that total expenditures may have been more underestimated during 1981/82 than during 1978/79 can have implications when welfare comparisons are made. For example, it may lead to an underestimation of the difference in real consumption between 1981/82 and 1978/79. In another vein, the difference in food shares between 1981/82 and 1978/79 may be overestimated. Such an overestimate may be made larger if food expenditures are "better" represented in 1981/82 than in 1978/79.

Table 44—Estimates from Consumer Finance Surveys and National Accounts of annual per capita food and total private consumption expenditures, 1978/79 and 1981/82

	1978/79			1981/82		
	Consumer Finance Survey	National Accounts	Ratio	Consumer Finance Survey	National Accounts	Ratio
			(Rs/capita/year)			
Total private consumption expenditures	2,079	2,660	78.2	3,734	5,099	73.2
Food expenditures	1,133	1,268	89.4	2,167	2,273	95.3

Source: S. Anand and C. Harris, "Living Standards in Sri Lanka, 1973-1981/82: An Analysis of Consumer Finance Survey Data," report prepared for the World Bank-Central Bank of Ceylon project on the Evaluation of Living Standards in Sri Lanka, Oxford University, April 1985 (mimeographed), p. 75.

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[79] The weighting procedure adopted to make annual data comparable with the CFS survey periods is the same as the procedure described earlier in this appendix.

[80] Anand and Harris, "Living Standards in Sri Lanka," p. 73.

In this context, a more fundamental aspect needs consideration. The two CFS surveys were conducted after trade liberalization policies were adopted; the first almost immediately after the new policies were begun, and the second about 3 years after they became effective. Considering that trade liberalization came after three decades of controls and scarcities, and that in the post-liberalization period the economy grew at a rate of 5·6 percent per year, consumer expenditures could be expected to be heavy, particularly on consumer durables and semidurables. Such expenditures could be expected among the upper-income households first. Durables and semidurables, almost by definition, are not replaced in the short run. This gives rise to the possibility that the nonfood expenditures reported by the upper-income households reflect the heightened demand for durables and semidurables in the period just before the 1981/82 survey reference period. Caution is thus required when interpreting comparisons of real consumption in general and among the upper-income classes in particular.

APPENDIX 3: ESTIMATION OF FOOD STAMP RECEIPTS BY HOUSEHOLDS

The estimates of the incidence of food stamp recipients and receipts had to be derived using an indirect procedure because the food stamp data were not recorded separately from other government transfers in the CFS 1981/82 survey. However, government transfers were recorded as a separate source of household income. The usual channels through which government transfers can be added to household income include food and kerosene stamps, traditional welfare payments to the destitute by the Social Services Department, free textbooks and midday meals to school children, and travel concessions. During 1981 and 1982 certain additional welfare payments were also made as drought-relief assistance through the Social Services Department. It is unlikely that government transfers received by school children through midday meals, free textbooks, and concessionary travel were systematically estimated and recorded in this survey. Therefore, it can be assumed that most income recorded as government transfers was made up of food and kerosene stamps, traditional welfare payments, and special drought-relief payments.

From the total amount received as remittances from the government, the value of food and kerosene stamps was estimated by assuming that the most a family may have received as food and kerosene stamps was Rs 22 per capita. This maximum value was based on the range of maximum values observed in 1980-82 data from the Food and Nutrition Policy Planning Division of the Ministry of Plan Implementation (F&NPPD). In addition, households that reported receipts of government remittances by household assistants, such as servants and a category of persons identified as "others," were deleted from the analysis.[81] The number of households so removed accounted for less than 0.5 percent of the total sample. Estimates of the incidence of food stamp recipients and stamp values based on this methodology are presented in the text.

Table 45 provides estimates of the incidence of food stamp recipients based on another survey—the Nutritional Status and Socio-economic Survey conducted by the F&NPPD during 1980-82 (F&NPPD 1980-82). This survey collected information on food and kerosene stamps only from households with preschool children. Although collection of food stamp data was limited to certain regions, the final sample was large enough to judge the validity of using countrywide data from CFS 1981/82 to estimate the proportion of households receiving food stamps. Considering that the F&NPPD 1980-82 survey contained specific information on the values of food and kerosene stamps received by households, the close correspondence between the proportions receiving food stamps and the monetary value of stamps given in the two surveys validates the procedures adopted to distinguish food stamp recipients from data from CFS 1981/82. Further evidence on the consistency of using CFS 1981/82 data for evaluation of the food stamp scheme is provided by a survey of 1,000 households in two coastal districts—Kalutara and Galle—during 1980 by S. Abeyratne.[82] The results of an analysis of the raw data from this survey are given in Table 46. The high incidence of food stamp recipients in the table should be especially noted.

The procedures are validated further by the small difference between the estimated totals for the annual value of food and kero-

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[81] In the CFS 1981/82 survey, incomes earned by the servants and "others" were also added to total household incomes. Such households were deleted to avoid their being counted as food stamp recipients in the event the servants or "others" were stamp recipients.

[82] For a description of this survey, please see Seneka Abeyratne and Thomas T. Poleman, "Socioeconomic Determinants of Child Malnutrition in Sri Lanka: The Evidence from Galle and Kalutara Districts," Cornell International Agricultural Economics Study, Cornell University, Ithaca, N.Y., July 1983.

Table 45—Households receiving food stamps, estimated from F&NPPD 1980-82 survey

Per Capita Expenditure Quintile	Households Receiving Food Stamps	Food Stamp Recipients			
		Per Capita Expenditures	Per Capita Value of Food Stamps	Household Size	Total Value of Food Stamps
	(percent)	(Rs/month)			(Rs/month)
1	71.2	114	16.05	6.63	106
2	68.7	116	16.94	5.84	99
3	50.8	210	16.16	5.61	90
4	45.1	264	16.00	4.78	76
5	20.6	382	17.50	4.37	76
All	51.0	195	16.42	5.71	93.75

Source: Estimated using raw data from the Nutritional Status and Socioeconomic Survey 1980-1982 conducted by the Food and Nutrition Policy Planning Division of the Ministry of Plan Implementation, Sri Lanka.

sene stamps calculated from CFS 1981/82 data and from the national accounts of transfer payments. The weighted average of the total value of food and kerosene stamps issued during 1981 and 1982 was Rs 1,660 million. The estimate from CFS 1981/82 shows the total stamps bill to be around Rs 1,640 million. Additionally, payments received as government transfers, other than food and kerosene stamps, indicate a total of Rs 230 million, which is close to the weighted average allocation of approximately Rs 260 million made by the Social Services Department to payments of traditional welfare and special drought-relief assistance during 1981 and 1982.

The general food subsidy that was in operation during 1978/79 consisted of subsidies on rice, wheat flour, sugar, and "other foods," consisting mainly of infant milk foods. The subsidy per unit of all these items except infant milk foods was calculated using the total subsidy on each commodity and the quantities issued by the food commissioner's department, which was the agency that operated the government monopoly on distribution of these goods. The estimated subsidies from CFS 1978/79 and subsidies reported in national accounts are shown in Table 47. Since a breakdown of the "other foods" category was not available, it was left out of the calculations of the subsidy for both periods. For national account data, see Table 17.

Table 46—Households receiving food stamps and value of stamps received, by expenditure quintile, Kalutara and Galle districts, 1980

Per Capita Expenditure Quintile	Households Receiving Food Stamps	Per Capita Value of Food Stamps[a]
	(percent)	(Rs/month)
1	88.42	17.28
2	79.68	16.17
3	73.43	16.70
4	66.49	16.22
5	51.05	15.13
All	71.83	16.41

Source: Data from a survey of 1,000 households by Seneka Abeyratne, described in Seneka Abeyratne and Thomas T. Poleman, "Socioeconomic Determinants of Child Nutrition in Sri Lanka: The Evidence from Galle and Kalutara Districts," Cornell International Agricultural Economics Study, Cornell University, Ithaca, N.Y., July 1983.

[a] These data are for recipients only.

Table 47—Estimates of the subsidy, 1978/79

Commodity	Consumer Finance Survey 1978/79	National Accounts (Weighted Average)
	(Rs/1,000)	
Rice	1,152,700.9	1,177,000.0
Wheat (including bread)	903,582.7	927,000.0
Sugar	127,105.7	138,600.0
Total	2,183,389.3	2,242,600.0

Sources: The CFS 1978/79 data are from Central Bank of Ceylon, "Report on Consumer Finances and Socioeconomic Survey 1978/79," Central Bank of Ceylon, Colombo, n.d. (computer tape). The national accounts data are from Central Bank of Ceylon, *Annual Report*, various issues (Colombo: Central Bank of Ceylon, various years).

APPENDIX 4: ESTIMATION OF APPARENT CALORIE CONSUMPTION

The two CFS surveys had data for 182 comparable food items. CFS 1981/82 had 9 additional items, such as apples, jak seeds, soybean products, knol-khol, and marmite (a vegetable extract), which were of negligible importance in the diets. These were deleted. CFS 1978/79 food data, which were reported using pounds and ounces as the units of measurement, were transformed to the metric system used in CFS 1981/82. The quantities were converted to edible portions where necessary, and then to calories, using the conversion factors recommended by the Medical Research Institute.[83]

However, food items for which the quantities were not provided but only the value of the purchases posed a problem. Food consumption for which only the value spent was given, such as food consumed away from home, can be important to some households, particularly in the urban sector. To approximate the number of calories contained in these foods, a procedure proposed by Timmer and Alderman was adopted.[84] The total expenditures on these items were divided by twice the unit cost of calories from starchy staples—rice, rice products, wheat, and wheat products. The calories so derived accounted for less than 2 percent of total calories, on the average. Given the minimal importance of such calories in the diets, any bias should be minimal and applicable to both data sets.

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[83] W. D. A. Perera, P. M. Jayasekera, and S. Thaha, *Tables of Food Consumption for Use in Sri Lanka* (Colombo: World Health Foundation of Sri Lanka, 1979).

[84] C. Peter Timmer and Harold Alderman, "Preliminary Results of Sri Lanka Food Policy Data Analysis," June 1980 (mimeographed).

APPENDIX 5: RECIPIENT ATTITUDE TOWARD FOOD STAMPS

When the decisions were made to terminate the food rationing scheme, two options were considered, a direct cash transfer scheme and a food stamp scheme. The latter was chosen mainly on the premise that issuing cash to households would reduce the control the housewife usually has on spendable resources for food acquisition.[85] This, in turn, might have affected the nutritional welfare of the members of the household, particularly the children. This aspect of the food stamp scheme and other issues were examined in a study of 480 households from the Kandy district. Housewives of households receiving food stamps were asked a series of questions aimed at understanding how they perceived the food stamp scheme. Their spouses were asked the same questions separately.

Purpose and Adequacy of Food Stamps

The purpose the government had in issuing food stamps was clearly understood by almost all households as the enhancement of the food supplies of the household. Ninety-five percent of the wives and 93 percent of the husbands who responded confirmed this view. The remaining few respondents believed that nonfood consumption was expected to be increased as well. Almost all of the respondents felt that the incomes they were then receiving through food stamps were inadequate. Nearly half of the respondents, both husbands and wives, considered food stamps to be adequate for 7-10 days of food consumption. About 42 percent believed that food stamps could supply less than a week's food to their families. These observations are in general agreement with the share of food stamps in the food budgets discussed earlier.

Over 90 percent of the households used the food stamps during the first week of a month. Under the earlier rice rationing scheme, rice issues were made weekly. All food stamps appeared to have been exhausted within the first two weeks. During the period of the survey, the value of the kerosene stamp was Rs 22 per household. The value was increased from the original Rs 9.50 to account for the new administered prices on kerosene. Asked whether kerosene stamps were used to buy food, about 45 percent of the respondents said that they did. This fungibility is legal. There were a few households—about 8 percent—that used the food stamps from a future month for food purchases during the current month. Such "emergency" purchases were apparently limited to the stamps from the coming month by the authorized dealers who handle the food stamps on behalf of the government. A future month's stamps were usually used during the last week of the current month. There was an indication that the authorized dealers viewed the food stamp scheme as temporary, believing that the government might abandon it at any time. They thus perceived it to be dangerous to extend the risk of losing income for too long.

Sale of Food Stamps

One of the ways the desired effect of government transfers on nutrition could be dampened would be if food ration coupons or the food stamps were cashed and the proceeds used for nonfood consumption. However, emergency sales of food coupons that were meant to be used only later could also be made to tide over a current shortage in food consumption. In the Kandy survey, 60 percent of the wives who responded confirmed that they did sell food stamps when emergencies occurred. Of the husbands who were interviewed, only 3 percent said that food stamps were sold in emergencies. One inference from this discrepancy is that the husbands were not aware of practical aspects in the management of food budgets by the housewives. In general, it was observed that the male heads of the households delegated the management of the funds available for food acquisition almost completely to their wives. Further interviews with a few representative households showed that food stamps, which usually are valid for the next month, were sold at the cooperative store or the authorized dealer's store to which the household was assigned.

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[85] Personal communication from the Food Commissioner.

A smaller proportion—about 15 percent—of respondents also indicated that food stamps could be pawned to get emergency cash. The rate of interest paid on these loans ranged from 10 percent to 45 percent, with the majority of the respondents indicating that they paid an interest rate between 20 and 25 percent. These are short-term monthly rates.

Command Over Food Stamps

According to 73 percent of the respondents who were wives and 60 percent of the husbands, housewives had custody of the food stamps, which at the time of the survey were issued to households every six months. About 30 percent of the husbands said that they had custody of the food stamps. Were the housewives entrusted with the food stamps because of a desire for better safekeeping or because control over resources was rigidly demarcated? An answer can be inferred from the responses to a related question. When questioned regarding who decided how food stamps would be used, 24 percent of the wives and 37 percent of the husbands indicated the husband. Fifty-seven percent of the wives and 40 percent of the husbands indicated the housewife. It appears that in 25 to 30 percent of the households, the male head had custody and decided the use of the food stamps. Technically, food stamps are issued to each eligible individual in the household. Asked whether issuing the total value of a household's eligibility directly to the respondent would improve the nutritional intake of the household, only 5 percent of the husbands and 10 percent of the wives answered in the affirmative. All others said there would be no change. The nature of the command over food stamp resources appears to affect household nutrition only minimally. This is not surprising considering that the observed marginal propensities of these households to consume food out of overall spendable resources is very high.

Cash Versus Food Stamps

About one-fifth of both categories of respondents preferred cash to food stamps. Ten to 15 percent were indifferent to the form of the transfer. All others preferred food stamps. The main reasons provided by both types of respondents for their preference of cash rather than food stamps were, first, there were no losses from transactions with cash,[86] second, cash could be used any day or month, and lastly, one could buy goods from the cheapest source, which is not possible when food stamps are tied to a particular store.

The reasons given by those who preferred food stamps had one basis: the likelihood that cash would be spent on nonfood consumption. This perception of the majority of households in the Kandy survey is not substantiated by the food expenditure behavior of food stamp recipients observed nationally. The marginal propensity to consume out of income—whether it be cash incomes or food stamp incomes—did not differ by the source of income.

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[86] The losses referred to in the first reason arise when the value of all goods purchased is marginally less than the face value of the food stamps. The dealers do not provide the difference in cash because of accounting difficulties. The buyer may use this difference as credit for an additional purchase using his own cash. Failure to do so results in the "losses" referred to.

Table 48—Weekly food purchase patterns using food stamps, Kandy district, 1984

Commodity	Expenditures as a Share of Food Stamp Transactions				
	Week 1	Week 2	Week 3	Week 4	Total
			(percent)		
Rice	62.00	7.53	2.57	3.81	75.89
Food stamp expenditures as share of total expenditures	61.00	12.00	4.00	4.00	23.00
Wheat flour	4.47	0.86	0.38	0.37	6.09
Bread	0.32	0.20	0.12	0.02	0.67
Pulses	4.25	1.13	1.42	0.89	7.70
Infant milk and powdered milk	2.82	1.11	1.64	0.57	6.16
Other foods	0.74	2.71	. . .	0.04	3.49
Total	74.60	13.54	6.13	5.70	100.00

Source: Estimated from a survey of 480 households from the Kandy district conducted in 1984 by the International Food Policy Research Institute and the Food and Nutrition Policy Planning Division of the Ministry of Plan Implementation, Sri Lanka.

Purchase Patterns

There was evidence that food stamps may not be substantially different from cash as a medium of exchange. This was seen in the list of goods that food stamps were used to purchase. Besides the legally allowed commodities, which included rice, paddy, flour, bread, sugar, milk products, and locally produced pulses, many other goods were reported to have been purchased with food stamps. These included foods such as (imported) pulses, spices and condiments, dried fish, potatoes, coconuts, tinned foods, tea, coconut oil, vegetable extracts, and vegetables; and nonfood goods such as shaving blades, boxes of matches, soap, writing books, pens, and pencils.

This list is lengthy, but food stamps have been mostly used to purchase rice. The daily food expenditures recorded for one month during the Kandy study confirmed that more than 75 percent of total food stamp use was devoted to buy rice, the main staple (Table 48). Food stamp recipients in this sample obtained nearly a quarter of their rice with their stamps. Most of these purchases were made during the first week of the month.

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PRODUCTION INCENTIVES IN PHILIPPINE AGRICULTURE: EFFECTS OF TRADE AND EXCHANGE RATE POLICIES

Romeo M. Bautista

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CONTENTS

Foreword

1. Summary 9

2. Introduction 12

3. Agriculture in the Philippine Economy 14

4. Postwar Trade and Exchange Rate Policies 22

5. Effects on Relative Incentives Among Tradable Goods 30

6. Effects on Relative Incentives Between Tradable and Home Goods 39

7. The Real Exchange Rate as an Intermediate Policy Variable 46

8. Real Exchange Rate Changes and Agricultural Production Incentives 58

9. Some Perspectives and Conclusions 63

Appendix: Supplementary Tables 67

Bibliography 76

TABLES

1. Area harvested by crop and by region, 1969-71 annual average 14

2. Agricultural exports, f.o.b., 1950-83 17

3. Growth rates of agricultural value added and GNP at 1972 prices 18

4. Foreign trade and payments indicators, 1972-83 26

5. Implicit export tax rates, implicit and average tariff rates, and overall trade bias, 1950-80 32

6. Average effective exchange rates, by product category, 1950-59, 1960-69, and 1970-80 33

7. Ratios of effective exchange rates, by product category, 1950-80 35

8. Average effective exchange rate ratios (EER_i/EER_j) 36

9. Relative price ratios (RPR_{ij}), 1950-80 36

10. Coefficient estimates in the regression of log P_f on log P_w 37

11. Calculated values of relative price ratios between tradable and home goods, 1950-80 44

12. Calculation of the real exchange rate, 1950-84 48

13. Foreign trade indicators, 1950-84 54

14. Index of overall exchange rate effects (r^o/r) and contributions of various sources, 1950-80 56

15. Estimated equations for relative agricultural prices as dependent variables 60

16. Average proportionate effects of exchange rate misalignment on relative agricultural prices 61

17. Effective exchange rates by product category, 1950-80 67

18. Domestic and border price indexes for export and imported products, 1950-80 68

19. Farm-gate prices of major agricultural products, 1950-80 69

20. Wholesale prices of major agricultural products, 1950-80 70

21. Border prices of major agricultural products, 1950-80 71

22. Domestic price indexes for agricultural and nonagricultural export products, 1950-80 72

23. Power of the import tariffs (T_m) and export taxes (T_x, T_{ax}, T_{nx}), 1950-80 73

24. Wholesale price indexes for the United States and Japan and the yen/dollar exchange rate index, 1950-84 74

25. Implicit price indexes for GDP, agricultural and nonagricultural value added, 1950-84 75

ILLUSTRATIONS

1. Annual growth rates of GNP and agricultural value added (at 1972 prices) 19
2. Time profiles of the real exchange rate, 1950-84 49
3. Index of exchange rate distortion due to trade restrictions (r^u/r), 1950-80 51
4. Index of exchange rate distortion due to changes in terms of trade (r^t/r), 1950-84 52
5. Index of exchange rate distortion due to trade imbalance (r^b/r), 1950-84 55
6. Relative price indexes of agricultural products to home goods (P_a/P_h) and agricultural to nonagricultural products (P_a/P_{na}), 1950-84 59

FOREWORD

This report is another in the series undertaken by the International Food Trade and Food Security Program at IFPRI on trade and exchange rate regimes and how they affect agricultural incentives in developing countries.

Policymakers have become increasingly concerned about the effects of the global economic turbulence of the past decade on developing countries. In response to low real interest rates and a desire to encourage industrial sectors, many Third World countries borrowed extensively, which in turn led to overvalued exchange rates. This body of research has grown out of a new awareness that overvaluation discriminates against agriculture, particularly agricultural exports.

In addition to this study on the Philippines, other studies in this series include *The Effects of Exchange Rates and Commercial Policy on Agricultural Incentives in Colombia: 1953-78,* Research Report 24, by Jorge García García; *Agriculture and Economic Growth in an Open Economy: The Case of Argentina,* Research Report 36, by Domingo Cavallo and Yair Mundlak; *The Effects of Trade and Exchange Rate Policies on Agriculture in Nigeria,* Research Report 55, by T. Ademola Oyejide; and most recently *The Effects of Trade and Exchange Rate Policies on Agriculture in Zaire,* Research Report 56, by Tshikala B. Tshibaka. Research is under way for country studies on Chile, Peru, and Thailand.

Publication of this report coincides with an IFPRI policy workshop designed to provide a broad view of how trade and exchange rate policy influences agricultural growth in developing countries, supported by quantitative data on relative effects.

This research report examines the Philippine experience since 1950. In that year a comprehensive system of import and foreign exchange controls was imposed in response to a severe balance-of-payments problem. How such trade regime and the subsequent modifications, mostly aimed to promote industrial growth and macroeconomic stability, have affected agricultural production incentives is the focus of this study by Romeo M. Bautista. The empirical findings are analyzed in a broad policy context, and the author draws some implications for development strategy in the Philippines.

John W. Mellor

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1

SUMMARY

Although the relative importance of agriculture in the Philippine economy has declined measurably since the early 1950s, it still contributes directly about one-half of total employment and one-fourth of the gross domestic product. Also, some 40 percent of total export receipts is contributed by raw and simply processed agricultural products, while agricultural imports account for less than 10 percent of the total import bill.

This study investigates quantitatively the effects of trade and exchange rate policies on relative incentives in the Philippine economy, with special attention to the agricultural sector. One useful indicator of sectoral incentives provided by the foreign trade regime is the effective exchange rate for various types of external transactions, that is, the number of units of domestic currency actually paid by importers or received by exporters per unit of foreign exchange, including trade-related taxes and subsidies. The calculated changes in sectoral effective exchange rates from 1950 to 1980 indicate a persistent and significant bias in relative incentives against agricultural export production in favor of nontraditional (mainly industrial) exports and, most strongly, of import-competing industrial consumer goods. While understandable in the context of the development strategy based on import substitution in the 1950s and 1960s, it is inconsistent with the government's heavy emphasis on export promotion during the 1970s.

Among the major agricultural export crops, trade policy favored coconut in the 1970s, sugar in the 1960s, and pineapple in the 1950s. Compared with other import-competing essential consumer goods, rice benefited from a favorable trade regime in the 1960s but not in the 1970s. This does not seem consistent with government efforts to actively promote rice production in the latter decade, which was done through input subsidies With corn, trade policy was discriminatory in the 1960s but became favorable in the 1970s.

Domestic currency overvaluation, or an "overvalued exchange rate," benefits the home goods (nontradable) sector, into which resources are pulled at the expense of tradable goods production. Within the tradable goods sector, protection of domestic industries producing import substitutes effectively discriminates against export production. The study finds that a 10 percent rise in the domestic price of importables (due to tariffs, for example) is associated with a 6.6 percent decline in the domestic price of agricultural export products relative to home goods. On the other hand, a 10 percent increase in the domestic price of nonagricultural export products (due to fiscal incentives to industrial export producers, for example) leads to a 4.1 percent fall in the relative price of agricultural export products to home goods.

The calculated price effects of trade policy on exportables and importables relative to home goods for 1950-80 indicate substantial disincentives to production of traditional agricultural export commodities, and to a lesser extent, of nontraditional export products. On the other hand, domestic production of import-competing goods was favored over home goods until the early 1970s, when the bias shifted slightly toward home goods production.

Restrictions on foreign trade distort the real exchange rate relative to its free trade value. An import tariff raises the domestic price of importables, which encourages their domestic production and induces lower domestic consumption, leading to a decrease in imports. Export subsidies have an analogous effect, leading to an increase in exports. Resources are reallocated toward the tradable goods sector and away from home goods production. Thus output of home goods is reduced, resulting in an increase in their domestic price, which lowers the real exchange rate. Such overvaluation of the domestic currency cannot be eliminated by nominal exchange rate adjustment. It can be corrected only at its source, by removal of trade restrictions.

The degree of overvaluation of the Philippine peso due to trade restrictions is found in this study to have declined significantly from 1950 to 1980. The period of import and foreign exchange controls during the 1950s shows the largest deviation of the real exchange rate—by at least 100 percent on average—from the free trade value. After decontrol and peso devaluation in the early 1960s, a lowering of the real exchange rate overvaluation to 44-56 percent is observed during the decade. Finally, with nominal exchange rate flexibility and a less restrictive trade regime during the 1970s the peso overvaluation fell to 17-20 percent on average.

In addition to trade policy, two other influences on the real exchange rate are investigated: external terms-of-trade movements and trade imbalance. Based on the early 1970s as benchmark, the study finds that changes in the terms of trade significantly influenced the real exchange rate. In particular, the deterioration of the country's terms of trade from 1975 to 1984 effectively appreciated the Philippine peso by an average of 22 percent. Although unfavorable changes in the terms of trade cannot be attributed to domestic policy, they adversely affect price competitiveness in tradable goods production.

An existing imbalance in the external accounts that is not sustainable distorts the real exchange rate, artificially overvaluing or undervaluing the domestic currency. Therefore, past deficits in the current account, accommodated by drawing down international reserves or by foreign borrowing, served to defend an overvalued exchange rate, if only temporarily. Due to trade imbalance and the various aspects of macroeconomic policy that made it possible, the Philippine peso was overvalued by an average of 3.8 percent in the 1950s, by 2.1 percent during 1960-74, and by 8.0 percent during 1975- 84. This disequilibrium overvaluation is in addition to the effects of trade restrictions and terms-of-trade changes on the real exchange rate.

The size of the combined exchange rate effects indicates that the price competitiveness of tradable goods production in the Philippines was severely impaired by the country's protectionist trade policy. This was particularly the case during 1950-61, when imports and foreign exchange controls existed, and since the mid-1970s because of large trade deficits and unfavorable external terms of trade. The country's ability to prevent a foreign exchange crisis has been significantly weakened by the real exchange rate misalignment. A highly overvalued exchange rate is bound to result, sooner or later, in a severe balance-of-payments problem. This was demonstrated by the foreign exchange crises of the late 1950s and late 1960s. The policy response in both cases proved adequate for only a short time. The real exchange rate returned to unsustainable levels after three or four years, and the balance-of-payments crisis recurred.

Trade liberalization measures were adopted by the Philippine government in the early 1980s as part of a wider program of policy reforms and industrial restructuring to improve the international competitiveness of domestic producers. However, the concurrent exchange rate effects arising from massive trade deficits and terms of trade deterioration were evidently not addressed. Although political developments undoubtedly precipitated the foreign exchange crisis that began in August 1983, the severity of the real exchange rate misalignment made inevitable the eventual recurrence of a balance-of-payments crisis. The adoption of expansionary macroeconomic policies in disregard of the balance of payments, which was also being battered by adverse external terms-of-trade movements during 1975-83, can only be viewed as a policy mistake.

Regression analysis is used to explain the observed changes in agricultural prices vis-à-vis home goods and nonagricultural products during 1950-84 in terms of the movements of the real exchange rate and implicit trade taxes. The findings indicate that during 1950-61 the direct effect of the prevailing import and foreign exchange controls (associated with very high values of the implicit tariff rate) had the most influence on domestic agricultural price relative to nonagricultural products. At the same time, the indirect effect through the real exchange rate also contributed significantly to the decline in the relative price of agricultural products vis-à-vis home goods. As trade policy became less restrictive, the effects on the real exchange rate due to trade deficits and terms-of-trade movements assumed increasing importance. During 1975-80, these three influences on the real exchange rate effectively lowered the domestic agricultural price by 19 percent relative to home goods and by 25 percent relative to nonagricultural products. This reinforced the effect of falling international commodity prices at the time, resulting in a precipitous decline of relative agricultural prices in the Philippines from the mid-1970s to the early 1980s.

2

INTRODUCTION

Most developing countries have relatively open economies in which the agricultural sector is of substantial, if not dominant, importance. Government policies that promote agricultural production in general or affect relative incentives within agriculture can therefore have significant economywide effects. It is also reasonable to expect that trade and exchange rate policies, even if specifically directed to other sectors of the economy, can exert an important influence on agricultural incentives and performance.

As in many developing countries, government policies in the Philippines have been pervasive in their effects on the domestic economy and foreign trade. This study focuses on trade-related policies that create a wedge between domestic and foreign prices, the latter representing a widely used measure of social opportunity cost for tradable goods in a small, open economy. Such price intervention policies collectively define the country's foreign trade regime, or its trade and exchange rate policies. Whereas the effects of the foreign trade regime on the industrial sector have been much analyzed in the development literature, relatively little attention has been given to the impact of trade policy on agricultural incentives and performance.

The importance of agriculture to the Philippine economy is discussed in Chapter 3. It describes the changing structure, growth, and export performance of the agricultural sector since the early 1950s, observing how they correlate with some aspects of the country's macroeconomic performance. The empirical evidence on supply responsiveness of Philippine agriculture to relative price changes is also reviewed, recognizing that the relevance of this study to policymaking depends critically on how agricultural producers respond to price incentives.

To provide a historical perspective and policy context to the study, Chapter 4 briefly describes Philippine trade and exchange rate policies, indicating various stages in the evolution of the foreign trade regime since the late 1940s, the general character of the induced structure of price incentives, and their likely relationship to the observed macroeconomic and sectoral growth patterns.

Chapter 5 investigates the effects of the trade regime on relative incentives to produce tradable goods. The focus is on the period 1950-80, because policy changes beginning in 1981 have been either transitional (in 1981 and 1982) or in the nature of emergency measures addressing the foreign exchange crisis (in 1983 and 1984). The relative measures of sectoral production incentives distinguish between exportables and importables at the most aggregative level; among various exchange control categories, including traditional agricultural exports; and among the country's major agricultural products.

The domestic price structure is influenced by trade and exchange rate policies not only through the effects on relative prices of tradable goods but also through the effects on the domestic prices of tradable goods relative to home goods. Chapter 6 examines the extent to which the foreign trade regime has affected the relationship between tradable and home goods prices in the Philippines, based on a general equilibrium model of exportables, importables, and home goods. The empirical analysis further distinguishes between agricultural and nonagricultural export goods in the determination of the relative price effects vis-à-vis home goods.

In Chapter 7 the intermediary role of the real exchange rate in transmitting the effects of trade policy on agricultural production incentives is examined. After describing the behavior of the real exchange rate during 1983-84, three sources of exchange rate misalignment are investigated. Their separate and combined effects on relative agricultural prices vis-à-vis home goods and nonagricultural prices are analyzed in Chapter 8.

Finally, Chapter 9 comments on the implicit resource transfer out of agriculture due to the price bias arising from trade and exchange rate policies. Based on the findings of the study, it also considers some implications for development policy and strategy in the Philippines.

3

AGRICULTURE IN THE PHILIPPINE ECONOMY

Structure and Growth

The agricultural sector, broadly defined (as in the national income accounts) to include agricultural crops, livestock, poultry, fishery, and forestry, has traditionally been a major source of employment, income, and foreign exchange earnings in the Philippines. More than two-thirds of the country's population are still in the rural areas, where agriculture and related production activities represent, almost by definition, the principal means of livelihood. Although its relative importance has declined over the years, agriculture still contributes directly about one-half of total employment and one-fourth of the country's gross domestic product. Also, it provides some 40 percent of total export receipts (from raw and simply processed agricultural products), while agricultural imports account for less than 10 percent of the total import bill.

Crop production is the largest component of Philippine agriculture, contributing close to 60 percent of total agricultural value added in recent years. Relatively smaller shares are attributable to livestock and poultry (17 percent), fishery (16 percent), and forestry (7 percent). A frequently used classification of agricultural crops distinguishes between food and export crops. Rice and corn dominate the food crop category, accounting for 28 and 10 percent, respectively, of total value added in Philippine crop production. Coconut and sugarcane are the major export crops, contributing 9 percent each. About 86 percent of total area harvested is jointly accounted for by these four crops. The importance of tobacco and abaca (Manila hemp), which used to be significant sources of foreign exchange earnings, has decreased markedly during the last quarter-century. Some food crops, such as banana, pineapple, and relatively recently mango, coffee, and cocoa, have also been exported, so that the food-export crop distinction is not clear-cut.

The regional cropping pattern is shown in Table 1. Rice and to a lesser extent corn and coconut are widely grown. Production of other principal crops is more regionally concentrated: sugarcane in Western Visayas and Central Luzon, abaca in Bicol and Eastern Visayas, pineapple in Mindanao, and

Table 1—Area harvested by crop and by region, 1969-71 annual average

Region	Rice	Corn	Coconut	Sugar-cane	Tobacco	Abaca	Pine-apple	Banana	Root-crops	Vege-tables
					(1,000 hectares)					
Ilocos	129.2	18.8	1.9	. . .	31.3	. . .	. . .	0.6	10.0	14.8
Cagayan	290.7	197.9	7.7	. . .	25.2	. . .	. . .	7.8	17.5	3.6
Central Luzon	646.1	80.1	7.7	76.7	9.9	. . .	. . .	17.8	10.0	14.1
Southern Tagalog	387.6	141.4	335.1	38.4	0.8	. . .	4.0	36.1	10.0	9.5
Bicol	323.5	94.5	254.6	. . .	. . .	70.2	. . .	24.7	37.6	4.2
Western Visayas	420.0	306.3	142.5	234.0	. . .	5.0	. . .	36.6	17.5	4.7
Eastern Visayas	290.7	329.9	392.9	26.9	. . .	45.1	. . .	43.4	82.7	2.9
Northern Mindanao	226.1	259.2	344.9	. . .	. . .	18.4	11.0	32.0	40.1	1.4
Southern Mindanao	452.2	918.9	429.5	. . .	. . .	28.4	9.0	22.9	24.8	4.2
Total	3,166.1	2,347.0	1,916.8	376.0	83.5	167.1	24.0	227.0	250.2	59.4

Source: Howarth E. Bouis, "Rice Policy in the Philippines" (Ph.D. dissertation, Food Research Institute, Stanford University, 1982), Table IV-2.

Note: Total area harvested, including other crops, was 8,987.5 hectares in 1969-71.

tobacco in the northern regions of Ilocos and Cagayan.

While most food crops are either import-competing or exportable, some root crops, fruits, and vegetables are essentially home goods (nontradables) due to prohibitive marketing costs. Nontradables account for less than 10 percent of total crop value added.

Tradable goods also dominate the noncrop agricultural subsectors. The exception perhaps is fishery, although exports of shrimp, prawns, and fish, while still less than 5 percent of total production, have been increasing since the early 1970s. Imports of livestock and poultry products compose about 10 percent of final demand, whereas forestry exports represent about 15 percent of the domestic output.

Historically, the growth of Philippine agriculture has been significantly influenced by foreign trade, technological change, and domestic policies affecting production incentives. Export crop production was fostered under both Spanish and American colonial rule. After the country gained political independence in 1946, the postwar expansion of the U.S. market and the Korean War (1950-53) provided the stimulus for increased export demand for agricultural products at the same time that the rapid growth in population and per capita income boosted domestic demand. During the three decades between 1950 and 1980, Philippine crop and livestock production grew at an average annual rate of 4.9 percent.[1] The most rapid growth occurred during 1950-55 (by 6.7 percent annually), when land area and cultivation expanded markedly in response to the favorable market demand. Even excluding the first half of the 1950s, such growth performance compares favorably with the country's prewar agricultural record and with that of most other middle-income countries in the postwar period.

There was a slowdown in agricultural growth during 1955-65 to an average of about 3 percent per year. As noted by David et al., "During this period tariffs and trade quotas on previously favored exports to the U.S. were gradually imposed, domestic currency became increasingly overvalued, and population growth began to press on limited supply of land."[2] Subsequently, the annual growth rate of agricultural output rose to 4.0 percent in 1965-70 and to 6.5 percent in 1970-75. Again, price incentives appear to have been a significant influence. The agricultural terms of trade improved significantly from 1965 to 1975 due to the trade liberalization measures implemented during the first half of the 1960s, the floating of the exchange rate in 1970, and the world commodity boom in 1972-74. The period also witnessed increased adoption of high-yielding rice varieties and massive public investment in irrigation.

As the country's terms of trade began to deteriorate in the late 1970s, agricultural output grew less rapidly. "World prices of major export crops dropped sharply. The increasing distortions in the exchange rate and agricultural output and fertilizer prices . . . further exacerbated the squeeze on agricultural incentives."[3] This would explain in part the drastic decline in the annual agricultural growth rate from 6.2 percent in 1975-80 to 0.3 percent in 1980-82, which took place without a major weather disturbance.

The political turmoil and economic crisis beginning in August 1983 further depressed agricultural activity. Based on national income accounts data, gross value added in the agricultural sector (including fishery and forestry) decreased between 1982 and 1985 by 16 million pesos (P) at 1972 prices.[4] Agricultural crops showed an even larger decline of P 104 million.

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[1] In the remainder of this chapter, agricultural output is more narrowly defined to include only crops and livestock, unless otherwise indicated. The source of data is Cristina C. David, Randolph Barker, and Adelita Palacpac, *The Nature of Productivity Growth in Philippine Agriculture, 1948-82,* Paper No. 84-22 (Los Baños: International Rice Research Institute, 1984).

[2] Ibid., p. 3.

[3] Ibid., pp. 3-4.

[4] In 1972, one Philippine peso was equivalent to U.S. $0.15.

Agricultural Export Performance

The importance of agriculture in the Philippine economy is reflected in the composition of exports. Indicating the country's rich natural resource base, close to 90 percent of total export earnings was being contributed by raw or simply processed agricultural products as late as the mid-1960s (Table 2). There has since been a significant reduction in the agricultural export share, dropping to 47 percent by 1980. This is related to the increasingly active government promotion of industrial exports, especially labor-intensive manufactured goods, and increased domestic processing of primary products since the early 1970s. Indeed the share of such nontraditional manufactured exports climbed from 8 percent in 1970 to 36 percent in 1980.

Another notable development in the 1970s was the rapid expansion of nontraditional agricultural exports. Foreign exchange earnings from exports of fruits and vegetables increased from U.S. $35 million in 1970 to U.S. $365 million in 1980. Exports of fish and marine products, together with coffee, tea, and cocoa, which were almost negligible in 1970, rose to more than U.S. $200 million by 1980. The residual category, Other, which includes the nontraditional animal feeds and miscellaneous preparations, grew more than eightfold over the same period. Much lower growth rates were recorded by the country's traditional exports of coconut, sugar, abaca, tobacco, and forestry products. Their combined share in total agricultural exports declined markedly from 93.0 percent in 1970 to 73.2 percent in 1980.

Since the early 1980s agricultural exports have decreased not only in relation to total exports but also absolutely. Except for tobacco, every category of agricultural products suffered a decline in export value during 1981-83 relative to the 1980 export performance, as can be seen in Table 2. Total agricultural exports decreased from U.S. $2.7 billion in 1980 to an average of $2.1 billion in 1981-83, and their share in overall export earnings declined from 47 to 41 percent. It is significant that this recent deterioration in Philippine export performance largely occurred prior to the emergence of the external debt-induced foreign exchange crisis in late 1983.

Agricultural Growth and Macroeconomic Performance

The declining performance of the agricultural sector in production and exports since 1980 is reflected in the overall growth of the economy. Real GNP growth slowed from 6.9 percent in 1979 to 5.0 percent in 1980, 3.4 percent in 1981, 1.9 percent in 1982, and 1.3 percent in 1983. This was without precedent in the postwar economic history of the Philippines. During the same period the country's annual current account deficit reached record high levels, averaging U.S. $2.4 billion, or about 46 percent of total exports. Underlying reasons commonly cited are the sluggish growth of industrial economies since 1980, the intensification of protectionism in developed-country markets (particularly against labor-intensive manufactures), and the steep fall in world commodity prices. The same factors would have been expected to impede economic growth in neighboring Asian countries, which however did not seem to have been affected as badly.[5]

In 1984-85, as the foreign exchange crisis took its toll and generally contractionary stabilization policy measures were adopted, there was an absolute decline in real GNP by about 10 percent. Clearly, the major challenge currently facing Philippine policymakers is to find the route to economic recovery and longer-term growth.

The critical role of the agricultural sector in providing a basis for future stable growth of the Philippine economy was emphasized in a comprehensive program for agriculture launched by the government in 1984. One

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[5] In each year from 1980 to 1984, the real GNP growth rate for the Philippines was lower than in any of the other market economies in Southeast Asia, namely, Indonesia, Malaysia, Singapore, and Thailand.

Table 2—Agricultural exports, f.o.b., 1950-83

Product Category	1950	1955	1960	1965	1970	1975	1980	1981-83 (Annual Average)
				(U.S. $ million)				
Coconut products	178 (53.8)	152 (37.9)	177 (31.6)	271 (35.3)	212 (20.0)	466 (20.3)	811 (14.0)	673 (12.8)
Sugar products	53 (16.0)	111 (27.7)	135 (24.1)	147 (19.1)	196 (18.5)	616 (26.8)	657 (11.4)	458 (8.7)
Forestry products	11 (3.3)	44 (11.0)	95 (17.0)	195 (25.4)	301 (28.3)	260 (11.3)	468 (8.1)	387 (7.4)
Fruits and vegetables	10 (3.0)	6 (1.5)	25 (4.5)	17 (2.2)	35 (3.3)	124 (5.4)	365 (6.3)	360 (6.9)
Abaca and products	42 (12.7)	29 (7.2)	43 (7.7)	26 (3.4)	17 (1.6)	22 (1.0)	31 (0.5)	25 (0.5)
Tobacco and products	2 (0.6)	4 (1.0)	3 (0.5)	16 (2.1)	15 (1.4)	35 (1.5)	30 (0.5)	45 (0.8)
Fish and marine products	. . .	. . .	. . .	. . .	2 (0.2)	17 (0.7)	138 (2.4)	129 (2.5)
Coffee, tea, and cocoa	. . .	. . .	. . .	. . .	. . .	5 (0.0)	66 (1.1)	63 (1.2)
Other agricultural products	2 (0.6)	. . .	2 (0.4)	15 (2.0)	19 (1.8)	37 (1.6)	163 (2.8)	
Total agricultural exports	298 (90.0)	346 (86.3)	480 (85.7)	687 (89.5)	797 (75.0)	1,582 (67.0)	2,729 (47.1)	2,140 (40.7)
Total exports	331	401	560	768	1,062	2,294	5,788	5,249

Sources: Philippines, National Economic and Development Authority, *Philippine Statistical Yearbook, 1985* (Manila: NEDA, 1985); and Central Bank of the Philippines, *Statistical Bulletin,* various issues.

Notes: Numbers in parentheses indicate percentages of total exports; the ellipses (. . .) denote less than $1 million.

of the specific objectives was "to increase agriculture's contribution to the balance of payments through expanded exports and import substitution."[6] The program aimed generally to improve agricultural productivity and promote "a stronger and more diversified farming system." The new government of Corazon Aquino has gone further, moving quickly to announce, in mid-1986, the adoption of employment-oriented agricultural and rural growth as the centerpiece of an "Agenda for a People-Powered Development." Sharply increased public spending on rural infrastructures and improved agricultural prices are being planned with a view to raising farm productivity and rural incomes. Through intermediate and final demand linkages, they are expected to stimulate demand not only for food and other agricultural products but also for industrial goods and services.

On the supply side an agriculture-based development program is also attractive, given the existing foreign exchange shortage in the Philippines, because the import requirements of increasing agricultural production are less than for the more import-dependent industrial sector. Finally, in a country where the rural-urban income differential is quite large, raising employment and income in the rural areas may well prove to be the most efficient means of improving income distribution. This is a matter of increasing policy concern in the Philippines.

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[6] José Galang, "Economic Husbandry," *Far Eastern Economic Review* 31 (January 1985): 46-49.

Both the postwar record of the Philippine economy and international experience seem to support the view that there is a strong link between agricultural growth and macroeconomic performance in developing countries. Table 3 shows that, for the four periods indicated, higher average annual growth rates of agricultural value added are associated with higher growth rates of real GNP. The calculated values of the correlation coefficient—0.667 for 1950-85 and 0.784 for the more recent period 1970-85—also indicate a significantly positive association between the annual growth rates of agricultural output and real GNP. This is also evident from the time profiles of the annual growth rates shown in Figure 1. Such statistical correlation is of course only suggestive of, but does not establish, the behavioral relationship between agricultural growth and real GNP growth.

Internationally, it has also been observed that the growth of the agricultural sector is strongly associated with the growth of the national economy. "Among countries where the agricultural share of GDP was greater than 20 percent in 1970 (including the Philippines), agricultural growth in the 1970s exceeded 3 percent a year in 17 of the 23 countries whose GDP growth was above 5 percent a year," according to a World Bank study.[7] Based on data for 31 developing countries whose growth did not deteriorate in the 1970s (relative to the preceding decade), Adelman finds "that 80 percent had above average performance in agriculture."[8] Interestingly, the rank correlation between the growth rates of GDP and agricultural output is especially strong (0.932) among lower middle-income countries, among which the Philippines is included.

Table 3—Growth rates of agricultural value added and GNP at 1972 prices

	Annual Average Growth Rate	
Period	Agricultural Value Added	GNP
1950-60	5.23	6.35
1960-70	4.28	5.15
1970-80	4.83	6.39
1980-85	1.35	-0.53

Sources: Based on data for 1950-82 from Philippines, National Economic and Development Authority, *Philippine Statistical Yearbook* (Manila: NEDA, various years); and for 1983-85 from Philippines, National Economic and Development Authority, "The National Income Accounts of the Philippines, 1983-85," Manila, December 1985.

Price Responsiveness of Agricultural Supply

This study is primarily concerned with the effects of Philippine trade and exchange rate policies on the domestic price structure, focusing on the differential effects on agricultural production incentives. Its relevance to policymaking depends critically on the responsiveness of agricultural producers to price incentives, in the aggregate and at various levels of product disaggregation. This is so because there are nonprice instruments available to policymakers that can also influence the structure and growth of agricultural output. If agricultural supply is found not to respond to an improvement in economic incentives, one must presume that some nonprice production constraints need to be overcome, for example, technological backwardness, limited access to the required inputs, or inadequate transport and marketing facilities. On the other hand, it is also possible that simply lifting producer prices from currently depressed levels will lead to a significant increase in farm output. If distortionary policies cause the relative price of certain agricultural products to be artificially low, making the production of those commodities unremunerative, the removal of such a source of price distortions through policy reform could be an inexpen-

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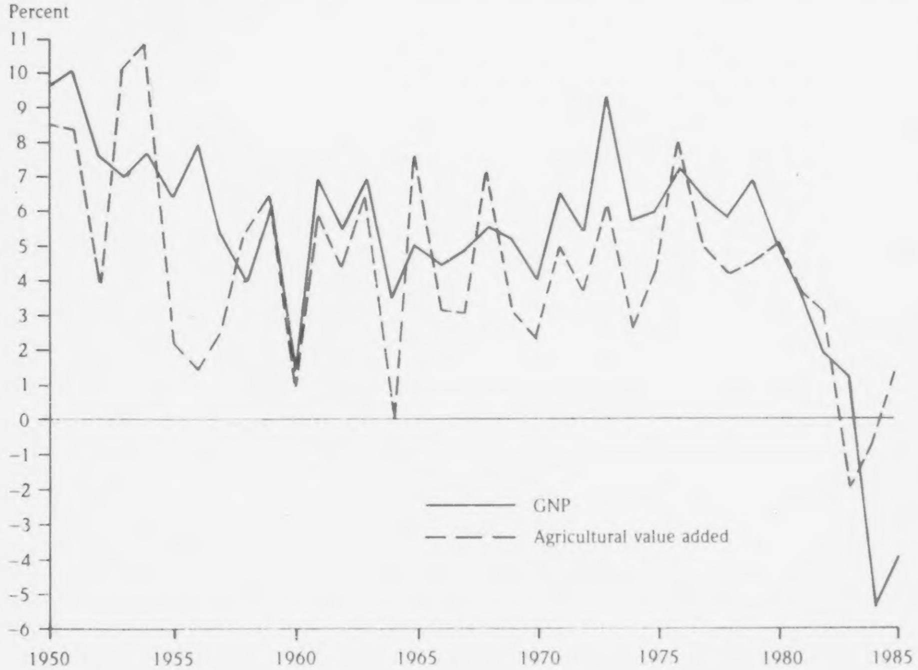
[7] World Bank, *World Development Report 1982* (Oxford: Oxford University Press, 1982), p. 44.

[8] Irma Adelman, "Beyond Export Led Growth," *World Development* 12 (September 1984), p. 946.

Figure 1—Annual growth rates of GNP and agricultural value added (at 1972 prices)



Sources: Based on data for 1950-82 from Philippines, National Economic and Development Authority, *Philippine Statistical Yearbook* (Manila: NEDA, various years); and for 1983-85 from Philippines, National Economic and Development Authority, "The National Income Accounts of the Philippines, 1983-85," Manila, December 1985.

sive means of improving agricultural performance.

In practice there is likely to be some interaction between the price mechanism and nonprice factors as they affect agricultural output. The short-run supply response to price incentives surely depends on the state of agricultural technology and institutions, the adequacy of rural infrastructure, the existing stock of agricultural capital, and the availability of variable inputs. Over time such nonprice influences on agricultural production, especially those determined by private decisions, are themselves likely to be affected by relative price changes, so the longer-run price effects can be expected to be larger than the short-run impact on agricultural output. The quantitative evaluation of these dynamic effects is an inherently difficult econometric task, raising both conceptual and statistical problems.[9]

It matters a great deal whether the price elasticity of agricultural supply is for specific products, a group of closely related products, or the aggregate. There is ample evidence of a high degree of intercommodity substitution in Philippine crop production. Producers of rice, the most widely grown crop, have been found to be generally responsive to changes in the price of rice relative to corn, sugarcane, coconut, and other agricultural commodities. Assuming that the price elasticity of rice hectarage is the lower limit to the price elasticity of output (that is, the price elasticity of rice yield is nonnegative), Mangahas et al. conclude, from a regression analysis of area response based on 1953-54 to 1963-64 data for the country's nine regions, that "it may well be that in several of the regions the elasticity of the marketed surplus of rice with respect to expected (relative) price is at least unity."[10]

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[9] See, for example, Hossein Askari and John T. Cummings, *Agricultural Supply Response: A Survey of Econometric Evidence* (New York: Praeger, 1976); and more recently Yair Mundlak, "The Aggregate Agricultural Supply," International Food Policy Research Institute, Washington, D.C., September 1985 (mimeographed).

Using regional data for 1960-78, which include therefore several years after the introduction of high-yielding rice varieties, Bouis also finds significant reallocation of farm resources due to relative price changes among the principal crops produced in each region.[11] Estimated short-run rice area elasticities with respect to expected rice/corn revenue per hectare are positive for all but one of the nine regions, ranging from 0.09 to 0.57. The regression results also indicate important interactions between rice and other principal crops (apart from corn): sugar in Western Visayas and Central Luzon; coconut in Southern Mindanao, Northern Mindanao, and Eastern Visayas; and tobacco in Cagayan.

Own-price and cross-price elasticities of output supply for two agricultural product categories, namely, food and export crops, have been estimated by the present author using the profit function approach and annual data for 1948-74. Individual crops are aggregated into the food and export crop categories using chained Fisher quantity and price indexes. The short-run elasticity estimates are: own-price, 0.302 for food crops, 0.251 for export crops; cross-price, −0.198 for food crops and −0.121 for export crops.[12]

Finally, at the most aggregative level, Quizon's work on input demand and output supply elasticities in Philippine agriculture (including crops and livestock), also based on the profit function approach but utilizing pooled time-series and cross-section data for the nine regions from 1948 to 1974, indicates a statistically significant estimate of 0.104 (computed at sample means) for the short-run price elasticity of aggregate supply.[13] This figure lies within the range of about 0.0 to 0.3 obtained in a recent survey of empirical evidence on short-run aggregate agricultural supply response in developing countries.[14]

These illustrative findings for the Philippines indicate that the price responsiveness of agricultural supply in the short run diminishes with an increasing level of product aggregation. This would seem intuitively plausible in view of the progressively limited possibilities for resource reallocation as products become more differentiated. It can only be expected that the scope for shifting resources in the short run from agricultural to nonagricultural production would be more limited than that from food to export crops, and even more so in comparison with the scope for factor input substitution from rice to corn and other crops.

In sharp contrast to the extensive empirical work on short-run agricultural supply response, estimates of the longer-run price effects are few and problematical. Specifications of dynamic supply behavior based on adaptive price expectations or partial output adjustment are widely used, but such a mechanistic approach does not address appropriately the problems concerning the likely interaction over time between relative price changes and the nonprice influences on agricultural output as indicated above. The latter requires a more general equilibrium framework that explicitly considers how the allocation of new and existing resources among competing production sectors from year to year is affected by the evolving domestic price structure. There has been no attempt to use such an analytical approach to estimate longer-run supply elasticities for Philippine agriculture. For other developing countries, the one published study that can be cited is the work of Cavallo and Mundlak, in which a two-sector model of the Argentine economy is developed that endogenously determines sectoral productivity, resource allocation, and investment from period to period.[15] It is worth noting that the dynamic price elasticity of aggregate agricultural supply derived from that study converges gradually to about 1.0 in 17 years.[16]

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[10] Mahar Mangahas, Aida Recto, and Vernon W. Ruttan, "Market Relationships for Rice and Corn in the Philippines," *Philippine Economic Journal* 5 (First Semester, 1966): 22-23.

[11] Howarth E. Bouis, "Rice Policy in the Philippines" (Ph.D. dissertation, Food Research Institute, Stanford University, 1982).

[12] Romeo M. Bautista, "Domestic Price Distortions and Agricultural Income in Developing Countries," *Journal of Development Economics* 23 (No. 1, 1986): 19-40.

[13] Jaime B. Quizon, "Factor Input Demand and Output Supply Elasticities in Philippine Agriculture," *Philippine Economic Journal* 20 (No.2, 1981): 103-126.

[14] Food and Agriculture Organization of the United Nations, "Agricultural Price Policies," Rome, 1985 (mimeographed).

The range of elasticity values indicated above, including those for short run and long run and at various levels of agricultural product aggregation, seems to suggest that prices matter but that the "prices alone" approach to policymaking is not likely to be adequate and may need to be complemented by cost-effective measures to improve the nonprice conditions influencing agricultural supply. While the present study focuses on the differential effects of the foreign trade regime on agricultural prices (at varying levels of product aggregation), there is no presumption that nonprice factors (technology, infrastructure, research, extension, and education, among others) are unimportant and can be neglected in the consideration of policy measures to improve agricultural performance.

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[15] Domingo Cavallo and Yair Mundlak, *Agriculture and Economic Growth in an Open Economy: The Case of Argentina,* Research Report 36 (Washington, D.C.: International Food Policy Research Institute, 1982).

[16] Domingo Cavallo, "Exchange Rate Overvaluation and Agriculture: The Case of Argentina," background paper for World Bank, *World Development Report, 1986* (Washington, D.C.: World Bank, 1986). An unpublished study on Chile using a similar dynamic framework indicates an even larger "implicit elasticity of about 2" over 20 years (see Mundlak, "Aggregate Agricultural Supply," p. 66).

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POSTWAR TRADE AND EXCHANGE RATE POLICIES

"Trade and exchange rate policies" and "foreign trade regime" are used synonymously in this study to mean not only the various aspects of commercial policy, such as tariffs, export taxes and subsidies, quantitative restrictions, and other trade barriers that create a wedge between the domestic and foreign prices of tradable goods (that is, exportables and importables), but also other policies that affect the domestic prices of tradable goods relative to nontradable or home goods. The need to distinguish between the price effects on tradables and home goods in this study derives from the high degree of tradability of agricultural output in the Philippines.

Import and Foreign Exchange Controls in the 1950s

Domestic demand for consumption and capital goods increased markedly in the period immediately after the Second World War.[17] Because of the severe devastation of the Philippine economy at the time, a large part of this demand could be met only through imports. Export industries had not been fully rehabilitated, and hence there was considerable pressure on the trade balance. The balance-of-payments problem increasingly worsened as monetary and fiscal policies became expansionary in 1949, a presidential election year. The government instituted in 1949-50 a comprehensive program of import and exchange controls, rationed the available foreign exchange among various claimants, and kept the prewar exchange rate of two pesos to the U.S. dollar.[18] Although direct controls on imports and foreign exchange were not deliberately introduced to stimulate industrial import substitution, this objective quickly became an effective motivation for continuing them. Philippine policymakers were eager to promote industrialization. As early as September 1946 a legislative act granted special tax exemptions to "new and necessary industries." However, it was not until the early 1950s, when the substantial benefits from import and exchange controls became evident, that a significant number of industrial firms registered for such special tax exemptions.

The immediate effect of restrictive import and exchange controls was a sharp rise in the prices of imported goods. This prompted the government to liberalize imports of "essential" consumer goods, raw materials, and capital equipment relative to so-called "nonessential" goods. Together with the highly overvalued currency, the criterion of essentiality governing the system of direct trade controls created a strong bias toward the domestic production of substitutes for finished industrial consumer goods, imports of which were considered less essential, while imported raw materials, intermediate products, and capital goods were made available at artificially low prices (in pesos). This effectively penalized the primary production sectors (agriculture and mining), export-oriented industries, and intermediate and capital goods production. The chronic trade deficits during the 1950s, particularly in the second half of the decade, reflected the increasing dependence of domestic industries on imports and the inability to stimulate new exports.

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[17] For a fuller account of the policy developments in the 1950s, see Frank H. Golay, *The Philippines: Public Policy and National Economic Development* (Ithaca, N.Y.: Cornell University Press, 1961); and Robert E. Baldwin, *Foreign Trade Regimes and Economic Development: The Philippines* (New York: National Bureau of Economic Research, 1975), Chapter 2.

[18] The Philippine Trade Act of 1946, passed by the U.S. Congress in 1946 and accepted by the Philippine government as an executive trade agreement, stipulated that until 1973 the government could not change the exchange rate of two pesos per U.S. dollar without the explicit agreement of the president of the United States.

Dissatisfaction with the control system grew as balance-of-payments difficulties continued and as charges mounted of corruption and poor administration of the system. There was also increasing pressure from exporters for a more favorable exchange rate and public perception of large windfall gains accruing to importers as a result of the scarcity premium from restricted imports. A law enacted in September 1955 aimed to compensate exporters for the currency overvaluation by allowing certain exports to be bartered for imports outside the exchange control system. Exports under this "No-Dollar Barter Law" (which was repealed in 1959) accounted for about 10 percent of total exports in 1957. Government efforts to capture part of the windfall gains going to importers included an increase in the sales tax on both imported and domestic products in late 1950, introduction of a 17 percent excise tax on the peso value of foreign exchange sold by the banking system, and increases in tariff rates in 1955 and 1957.

Decontrol, Exchange Rate Adjustment, and Tariff Protection in the 1960s

Toward the end of the 1950s, there was little room left for nonessential imports, as producer goods already amounted to nearly 90 percent of the annual import bill. The worsening trade deficit prompted the authorities to gradually dismantle the control system and rationalize the foreign exchange rate. This was initiated by the introduction in April 1960 of a multiple exchange rate system in which the applicable peso-dollar exchange rate ranged from 2.3 for exports to 4.0 for nonessential imports.[19] This system was modified over the next several months to further depreciate the domestic currency for each control category.

In January 1982, the government of newly elected President Diosdado Macapagal opted to accelerate the decontrol program, removing most controls on foreign exchange and floating the peso in the free market. The requirement of licenses for imports was discontinued, but import duties were raised on many items and special time deposit requirements on imports were imposed. Also, exporters were required to surrender 20 percent of their foreign exchange receipts at the old rate of two pesos per dollar.

By June 1962, the floating exchange rate had stabilized at P 3.90 per dollar, but exporters continued to receive only P 3.52 due to the 20 percent surrender requirement. The latter was only removed in November 1965, when the peso was officially devalued from P 2.00 to P 3.90 per dollar.

These policy reforms did not change qualitatively the incentive structure favoring import-substituting consumer goods industries. The protection structure continued to be heavily biased against exporting by a distorted and protective tariff system, which took effect in 1957 but was made redundant at the time by the import and foreign exchange controls, and discriminatory sales taxes. Tariff escalation, in which import duties are higher on semifinished products than on raw materials and higher still on finished products, encouraged assembly and packing operations that depended heavily on imported materials and capital equipment. The following average nominal tariff rates were calculated for 1957 by Valdepeñas for a sample of 111 commodities classified by Central Bank exchange control categories: highly essential goods, 15 percent; essential consumer goods, 18 percent; nonessential consumer goods, 51 percent; essential producer goods, 25 percent; and nonessential producer goods, 30 percent.[20] In view of the tariff increases in January 1962 for many import-competing products, the average tariff rate for nonessential consumer goods rose to 83 percent, for essential consumer goods to 38 percent, and for producer goods to 47 percent.

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[19] For a detailed discussion of changes in trade and exchange rate policies in the 1960s, see John H. Power and Gerardo P. Sicat, *The Philippines: Industrialization and Trade Policies* (London: Oxford University Press, 1971), and Baldwin, *Foreign Trade Regimes*, Chapters 3-4, pp. 50-83.

From the beginning of 1966 (when the administration of President Ferdinand Marcos first assumed power) to mid-1967, expansionary monetary and fiscal policies were adopted. Reserve requirements against savings and time deposits were reduced, the basic rediscount rate lowered, and credit conditions relaxed. At the same time, the new government undertook a massive program of capital formation emphasizing infrastructure investments and development services financed through both internal and external borrowing.

There were two unfavorable effects of these expansionary policies. One was an increase in inflation rates in 1966 and 1967. The other was the sharp deterioration in the country's trade balance, which was more worrisome to policymakers. After a U.S. $24 million surplus in 1965, the trade account showed deficits of U.S. $9 million and U.S. $224 million in the next two years, forcing the Central Bank to tighten credit and reintroduce foreign exchange controls in mid-1967. This failed to prevent a further worsening of the balance of payments as the government continued to pursue expansionary policies related to the election spending in 1969. Money supply rose 51 percent from 1965 to 1969 and by an unprecedented annual rate of 18 percent in 1969 alone. Both internal and external public debt nearly doubled during the same period.

Flexible Exchange Rate and Export Promotion in the 1970s

In late 1969, a foreign exchange crisis developed, precipitated by the need to service the short-term credit that had financed the trade deficits and expansionary policies in the immediately preceding years. The policy response was to float the Philippine peso in February 1970 and eliminate some of the exchange controls in effect since 1967. By December 1970 the nominal exchange rate had settled to 6.4 pesos per dollar, representing an effective devaluation of 61.4 percent over the year.

As part of the devaluation package, 80 percent of foreign exchange earnings from some traditional exports (including copra, sugar, logs, and copper concentrates) were to be surrendered to the Central Bank at the old exchange rate of 3.90 pesos per dollar, while the remaining 20 percent could be sold at the free market rate. This was replaced in May 1970 by a temporary stabilization tax on traditional exports (at rates ranging from 4 to 10 percent ad valorem), which in turn was made a permanent part of the customs and tariff code in 1973. Moreover, in February of 1974, an additional tax was levied on the premium derived from export price increases beginning in 1973.[21] Thus the significant gains from the devaluation and the world commodity boom in the early part of the 1970s were partly siphoned off from producers of traditional export products.

The de facto devaluation was followed by the enactment of the Export Incentives Act of 1970, which signaled a policy shift toward a more outward looking industrial development strategy. Among other incentives, enterprises registered with the Board of Investments (BOI) under this act qualified for various kinds of tax exemptions including export taxes, deductions of the firm's export revenue from taxable income for five years, and a tax credit equivalent to all taxes—sales, specific, and import—on raw materials used in export production. These were additional to the fiscal incentives made available to export producers under the Investment Incentives Act of 1967.[22] The average rate of tax subsidy for BOI-registered firms as a proportion of input value has been estimated at 15 percent in the mid-1970s.[23]

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[20] Vicente B. Valdepeñas, Jr. *The Protection and Development of Philippine Manufacturing* (Manila: Ateneo University Press, 1970), p. 81.

[21] Rates of this premium export duty, ranging from 20 to 30 percent, were applied to the difference between the ruling export price and the base price as of February 1984. When the commodity price boom ended later in the year, the premium tax became ineffective (except for sugar in 1975), and even the regular export tax was temporarily withdrawn on export commodities hardest hit by the recession.

A new tariff code took effect on January 1, 1973, that simplified the previously complicated tariff schedule by reducing the number of tariff rates to only six (a basic revenue rate of 10 percent and a five-level schedule of protection rates). It raised duties on 796 items in the old tariff code, reduced them on 451 items, and left unchanged 392. The net result was an average nominal protection slightly higher by about 3 or 4 percentage points.[24]

In addition to the improved exchange rate and fiscal incentives, export producers also received, on a selective basis favoring labor-intensive manufactured products, various forms of financial and infrastructure support, including the establishment of export processing zones and marketing services, as well as the simplification of export procedures and documentation. They compensated in part for the still pervasive bias of the country's incentive system against exporting. The highly protective tariff system was the primary source of this bias, but no attempt was made to deal directly with it as part of the export promotion program during the 1970s. Even so, the policy measure adopted in the early 1970s must have substantially enhanced the attractiveness of production for export relative to domestic sales during the first half of the decade.

One important and controversial aspect of Philippine economic policy in the 1970s concerns the management of the nominal exchange rate. From the floating of the peso in February 1970 to the 1983 foreign exchange crisis, the authorities maintained a flexible exchange rate policy, allowing the domestic currency to depreciate in nominal terms. The annual rate of depreciation varied slightly from year to year, exceeding 5 percent (but staying within 10 percent) only in 1972, 1975, and 1982.

In the face of sustained large deficits in the current account and higher inflation rates relative to the Philippines' trading partners since 1974, it seems surprising that the peso did not depreciate much more rapidly. The explanation lies in the capital account. The Philippines, having received relatively large foreign loans in the 1970s, faced no threat of depletion of international reserves and hence no immediate pressure to devalue. Indeed, as shown in Table 4, foreign borrowing was so large in 1974-79 that Central Bank reserves even increased significantly.

The current account deficits in the 1970s were of course related to the external shocks that buffeted the Philippine economy during the decade. The policy response to the adverse external developments and trade deficits was to borrow externally. In deciding to sustain the growth momentum initiated in the early 1970s, policymakers adopted a countercyclical strategy through expansionary fiscal and monetary policies. Thus, during 1974-80, the annual rate of increase in government spending and money supply averaged 22 and 18 percent, which were much higher than their trend rates.

Another notable aspect of the policy environment in the late 1970s was the in-

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[22] These incentives consisted of: first, a double deduction from taxable income of export promotion expenses and of freight costs incurred in exporting; and second, a tax credit equivalent of 7 percent of the cost of raw materials used in export production.

[23] Norma A. Tan, "The Structure of Protection and Resource Flows in the Philippines," in Romeo M. Bautista, John H. Power, and Associates, *Industrial Promotion Policies in the Philippines* (Makati: Philippine Institute for Development Studies, 1979), pp. 157-159.

[24] International Labour Office, *Sharing in Development in the Philippines* (Geneva: ILO, 1974), p. 113.

Table 4—Foreign trade and payments indicators, 1972-83

Year	Current Account Balance	Ratio of Current Account Deficits to Trade[a]	International Reserves[b]	Ratio of International Reserves to Trade[a]	Foreign Borrowing[c]	External Debt[d]	Debt Service Ratio[e]
	($ million)	(percent)	($ million)	(percent)	($ million)		(percent)
1972	9	. . .	551	35.7	166	2,210	27.8
1973	536	. . .	1,038	43.6	−49	2,306	17.1
1974	−176	4.6	1,504	39.8	642	2,723	14.2
1975	−892	23.4	1,360	35.7	748	3,402	15.6
1976	−1,050	25.6	1,642	40.0	1,188	5,099	24.9
1977	−752	15.9	1,524	32.1	634	6,563	17.2
1978	−1,102	19.6	1,881	33.7	1,459	8,195	20.8
1979	−1,497	20.8	2,416	33.8	2,032	9,733	20.3
1980	−1,904	20.7	3,140	34.5	2,628	12,187	18.7
1981	−2,061	20.9	2,574	26.3	1,628	14,826	21.2
1982	−3,121	31.8	1,711	17.7	2,957	17,475	28.9
1983	−2,707	28.4	864	9.1	1,270	18,864	23.9

Sources: John H. Power, "Response to Balance of Payments Crisis in the 1970s: Korea and the Philippines," Staff Paper Series No. 83-03, Philippine Institute for Development Studies, Makati, 1983 (mimeographed); and Filologo Pante, Jr., "The Evolution of the Balance of Payments," Philippine Institute for Development Studies, Makati, 1984 (mimeographed). Revised figures for international reserves in 1981, 1982, and 1983 were obtained from International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, 1986).

[a] Trade is the average of export and import values.

[b] International reserves are end-of-year gross.

[c] Foreign borrowing is the trade deficit plus the increase in international reserves.

[d] This is the end-of-year outstanding external debt (inclusive of short-term debt) of the nonmonetary sector.

[e] The debt service ratio is the debt service divided by foreign exchange receipts from exports of goods and services.

creased role of government in the regulation of various sectors of the economy. This was facilitated by the broad powers of the martial law regime imposed in September 1972. Government monopoly on foreign trade in rice, corn, and wheat and direct price controls during the 1970s effectively reduced the instability in domestic prices of major food crops. In the wake of the shortfalls in rice production during 1971-73, which coincided with the world food crisis, a major effort was undertaken by the government to promote rice self-sufficiency. The adoption of the new technology was encouraged by the so-called Masagana 99 program, which provided farmers with noncollateral, low-interest loans to purchase fertilizer and seeds at subsidized prices. Government investment in irrigation during 1973-77 expanded 10-fold in constant pesos relative to 1966-70.[25] Irrigation water was provided to food crop producers at a subsidy rate ranging from 60 to 90 percent.[26] Higher-than-border prices for fertilizer, farm chemicals, agricultural equipment, and fuel tended to offset the subsidized price of irrigation, making the domestic and world prices of inputs used by food crop producers comparable overall.

Trade in coconut and sugar—the country's dominant export crops—has been particularly subject to government intervention since the early 1970s beyond the imposition of export taxes and premium duties already mentioned. An export quota for sugar has been in effect since 1962. Beginning in 1970, sugar trading in both domestic and foreign markets was taken over by state corporations. Since 1974, there has been only one buyer and exporter of sugar from sugar mills. During 1974-80, producers received an average of only 77 percent of the world price.[27] It has been estimated that, due to the monopoly of domestic and foreign trade, sugar producers suffered a net loss of between 11 and 14 billion pesos over the crop years 1974/75 to 1982/83.[28] Moreover, the additional link in the market chain and inefficiencies in government marketing operations meant additional mark-ups and a substantially increased marketing margin.

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[25] Randolph Barker, *The Philippine Rice Program: Lessons for Agricultural Development*, Cornell International Agriculture Monograph 104 (Ithaca, N.Y.: Cornell University, 1984).

[26] Cristina C. David, "Economic Policies and Philippine Agriculture," Working Paper 83-02, Philippine Institute for Development Studies, Makati, 1983 (mimeographed), p. 29.

In the case of coconut, the government imposed a production levy, established a dominant coconut milling company, and began a program of coconut reporting. The coconut levy was initially set in 1971 at P 5.50 per ton of copra. It has since evolved into a variety of special levies, which have financed, among other things, the acquisition of a major share of the country's total milling capacity and operation of the Coconut Industry Development Fund to promote replanting of the country's coconut farms with hybrid varieties. Clarete and Roumasset have estimated that the nominal protection rate for copra was –8 percent from 1970 to 1972, and "it became more negative, –24 percent, from 1973 to 1979, reflecting the introduction of the levy."[29]

Tariff Liberalization and Foreign Exchange Shortage in the 1980s

By the late 1970s, Philippine policymakers were acutely aware of the need to further improve the international competitiveness of domestic industry, which was more heavily protected from foreign competition than other market economies in Southeast Asia.[30] With technical and financial support by the World Bank, a program of industrial structural adjustment was initiated in 1981. It included measures to significantly liberalize the foreign trade regime through tariff reform and relaxation of import licensing, to rationalize fiscal incentives, and to revitalize certain industries (for example, textiles) through technical and credit assistance. Unfortunately, the program was overtaken by the foreign exchange crisis beginning in August 1983. Some of its components were superseded by policy actions designed to deal with short-term contingencies.

What remained relatively intact was the tariff liberalization scheme. Peak tariff rates of 100 and 70 percent that did not affect 14 strategic industries (which had their own sectoral plans) were reduced to 50 percent in two stages on January 1 of 1981 and 1982. Very low rates, on the other hand, were raised to at least 10 percent by 1985. The gradual tariff revisions scheduled from 1981 to 1985 would have reduced the average tariff rate from 43 percent in 1980 to 18 percent in 1985. Effective tariff protection for manufacturing would have declined from 70 to 31 percent. Consumer goods industries still would have enjoyed the highest protection at 43 percent, versus 14 percent for intermediate goods and 20 percent for capital goods.[31] Protection for import-substituting industries also would have been reduced and that for export industries raised significantly, but the bias in favor of the former would remain.

To complement the tariff reform, import licensing was also to be gradually released.

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[27] Gerald C. Nelson and Mercedes Agcaoili, "Impact of Government Policies on Philippine Sugar," Working Paper 83-04, Philippine Institute for Development Studies, Makati, 1983 (mimeographed), p. 23.

[28] Dante B. Canlas et al., "An Analysis of the Philippine Economic Crisis: A Workshop Report," University of the Philippines, School of Economics, Quezon City, June 1984 (mimeographed).

[29] Ramon L. Clarete and James A. Roumasset, "An Analysis of the Economic Policies Affecting the Philippine Coconut Industry," Working Paper 83-08, Philippine Institute for Development Studies, Makati, 1983 (mimeographed), p. 28.

[30] Philippine Tariff Commission, *Tariff Profiles in ASEAN* (Manila: National Economic and Development Authority, 1979).

[31] Romeo M. Bautista, "The 1981-85 Tariff Changes and Effective Protection of Manufacturing Industries," *Journal of Philippine Development* 8 (Nos. 1 and 2, 1981): 1-20.

From the original list of 1,300 import items banned or requiring prior approval by the Central Bank and other government agencies, 264 were removed in 1981. Another 610 were taken off the list in early 1982, and the plan was to abolish the whole list by year-end 1983. Because of the foreign exchange crisis, the latter did not materialize. Instead, comprehensive controls on foreign exchange and imports were introduced.

Although the political turmoil and massive capital flight following the Aquino assassination precipitated the foreign exchange crisis, the rapid growth of the country's external debt and the sustained trade deficits that required it could have been avoided had macroeconomic policy been more prudent. As pointed out above, the government borrowed heavily abroad and pursued expansionary fiscal and monetary policies in the face of the large current account deficits induced by the 1973-74 oil crisis in order to sustain the growth momentum initiated in the early 1970s. While it probably made sense to seek foreign loans until 1978 when the London Interbank Offer Rate, LIBOR, was 9.3 percent, the same strategy after 1981 (when LIBOR had increased to 16 percent) proved very costly in terms of the country's debt burden.

What is worse, the investments made did not pay off. Government financial institutions bankrolled many projects of doubtful economic validity whose proponents were frequently persons with strong political connections.[32] Nonfinancial government corporations suffered from huge deficits, which averaged about P 12 billion in 1981-82. By 1982, foreign borrowing had reached a record 8.5 percent of GNP, and the government deficit was at an unprecedented 4.3 percent of GNP. It is not a coincidence that the public sector's share in total external debt rose from 40 percent in 1971 to 56 percent by 1982.

In absolute terms foreign borrowing by the private sector also increased significantly—by 20 percent annually during 1973-82 on the average (or, deflated by the import price index, by 8 percent). This can be attributed in part to the undervaluation of foreign exchange, which made foreign capital more attractive than that from domestic sources. Since the government generally guaranteed debt repayment, foreign lending to the private sector was given additional encouragement. Liberal access to external capital under conditions of restricted trade often leads to excessive foreign borrowing, as Hughes has pointed out.[33]

After 1981 current account deficits could no longer be financed from foreign loans, necessitating a significant drawing down of Central Bank reserves. Moreover, in view of the tightness of the international financial market, there was increasing difficulty in obtaining long-term loans. In 1982, short-term capital inflows were about three times those in 1979 (reaching U.S. $12.1 billion), and the ratio of short-term debt to total outstanding debt rose sharply from 18.6 percent to 25.6 percent. Normally, short-term loans were being rolled over on a 3- to 12-month basis. However, as foreign bank lenders became more apprehensive about the country's mounting indebtedness, short-term loans were increasingly called. The debt crisis arose essentially because lenders discontinued the rolling over of short-term loans owing to the political instability after August 1983. To compound the problem, there was a massive capital flight following the Aquino assassination, estimated at U.S. $200 million within a few weeks. The U.S. $2.7 billion current account deficit incurred in 1983 (representing

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[32] The conversion of government loans to equity became a common form of bailout for financially troubled firms. Thus, in mid-1983 the Development Bank of the Philippines, a government institution, owned or managed 73 large once-private firms. Other public corporations, such as the National Development Company and the Philippine National Bank, had also taken over many firms threatened by failure in which government exposure was substantial.

[33] Helen Hughes, "External Debt Problems of Developing Countries," in *Energy and Structural Change in the Asia-Pacific Region*, ed. Romeo M. Bautista and Seiji Naya (Makati: Philippine Institute for Development Studies and the Asian Development Bank, 1984), pp. 469-495.

8.0 percent of GNP) had to be financed from international reserves, which slumped to a level equivalent to less than one month's imports by mid-October. This represented, by any standard, a foreign exchange crisis. The Philippine government soon declared a moratorium on payment of debt principal, the total debt outstanding amounting to about U.S. $26 billion at the time.

Foreign exchange and import controls were imposed in October 1983, signaling an emergency retreat from the trade liberalization program. The Central Bank required all commercial banks to turn in their foreign exchange receipts so that priority imports and other payments could be made. It has been noted that the Central Bank priority listing tended to "give more protection to heavily protected import substitutes while penalizing less protected sectors (e.g., exports)."[34]

These controls on foreign exchange and imports superseded therefore the scheduled lifting of import bans in 1983 under the trade liberalization program. Tariff rate revisions through 1985, although made redundant by the exchange and import controls, had not been substantially affected. As a revenue measure and also to curtail imports, a 5 percent general import tax was imposed in November 1983, which was raised to 8 percent in April 1984 and then to 10 percent in June 1984. Additional export duties ranging from 2 to 5 percent were levied on traditional export products from November 1983 to December 1984, and an economic stabilization tax of 30 percent was imposed on all exports during June-September 1984. To discourage imports and reduce capital outflow, the peso was devalued three times—in June 1983 by 7.8 percent to 11 pesos per dollar, then in October to 14 pesos per dollar, and in June 1984 to 18 pesos per dollar. In October 1984 the peso was allowed to float.

Concluding Remarks

It is unfortunate that the recent major attempt at trade liberalization in the Philippines took place during a period of adverse conditions in the external economic environment. The deterioration in the country's terms of trade was especially severe: the trade index (1972 = 100) declined to 71 in 1977 and to 59 in 1982. The world recession that began in 1980 also imposed an effective constraint on the country's ability to expand exports and reduce trade deficits.

Unfavorable external circumstances undoubtedly have been an important influence in Philippine economic performance since the mid-1970s. They have also hampered the implementation of recent trade liberalization policies and contributed to the present balance-of-payments problem. However, this does not tell the whole story. The role of domestic policies has also been significant. The decision to maintain an ostensibly high growth strategy in support of expansionary macroeconomic policies and heavy external borrowing led to rapid increases in imports. This was not matched by a commensurate expansion of exports. This is explained by the depressed foreign demand and the relative uncompetitiveness of domestic industry. The latter in turn can be attributed to market price distortions arising from trade and industrial policies, which not only prevented a more rapid growth of Philippine exports, "but also undermined the efficiency of translating a high level of investment into growth."[35]

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[34] Mario B. Lamberte et al., *A Review and Appraisal of the Government Response to the 1983-84 Balance of Payments Crisis,* Monograph Series No. 8 (Makati: Philippine Institute for Development Studies, 1985), p. xvii.

[35] John H. Power, "Response to Balance of Payments Crises in the 1970s: Korea and the Philippines," Staff Paper Series 83-05, Philippine Institute for Development Studies, Makati, 1983 (mimeographed), p. 27.

5

EFFECTS ON RELATIVE INCENTIVES AMONG TRADABLE GOODS

This chapter examines the impact of Philippine trade and exchange rate policies on incentives to produce tradable goods. It considers first the overall trade bias (OTB), which indicates at the most aggregative level the extent to which the trade regime encouraged or discouraged the production of exportables relative to importables. The empirical analysis also yields annual estimates of aggregate implicit tariff and export tax rates, representing the average disparity between domestic and foreign (border) prices of tradable goods.

As indicated in the preceding chapter, the effects of the trade regime have differed by product categories, especially during the 1950s. It is appropriate, therefore, to examine their effects on production incentives for at least some tradable product groups. The most relevant for the present study are the traditional exports, new exports, essential consumer goods imports, and nonessential consumer goods imports. Finally, as the relationship between domestic and border prices could have varied across individual commodities, the incentive effects of the trade regime on the country's major agricultural products are also analyzed.

Aggregate Measure of Trade Bias

An OTB measure can be represented as:[36]

$$\mathrm{OTB} = (P_x/P_m)/(P_x^*/P_m^*), \qquad (1)$$

where P_x and P_m are the domestic prices of exportables and importables, and P_x^* and P_m^* are their respective border prices. A proportionate change in this relative price ratio would reflect the net movement of the relative domestic price of exportables vis-à-vis importables after taking into account the concurrent change in the relative foreign price; hence it can be interpreted to represent the change in the domestic price ratio due to domestic policies. If $\mathrm{OTB} < 1$, there is an antitrade bias in the country's commercial policy: the production of importables is being promoted relative to exportables, which would tend to reduce foreign trade. On the other hand, $\mathrm{OTB} > 1$ implies a protrade bias: there is price discrimination in favor of export production and against import substitution, increasing possibilities for trade. The unbiased value of $\mathrm{OTB} = 1$ indicates that neither export production nor import substitution is being encouraged by domestic price policies.

In the absence of quantitative trade restrictions,

$$P_x = (1 - t_x)\, R \cdot P_x^* = \mathrm{EER}_x \cdot P_x^*, \qquad (2)$$

and

$$P_m = (1 - t_m)\, R \cdot P_m^* = \mathrm{EER}_m \cdot P_m^*, \qquad (3)$$

where t_x and t_m are the implicit export tax and import tariff rates, R is the average nominal exchange rate applicable to export and import goods, and EER_x and EER_m are the effective exchange rates for exports and imports, respectively. EER estimates for exports and imports have been derived by Baldwin for the period from 1950 to 1971, which Senga has extended through 1980,[37] taking into account "the differential impact on these transactions of tariffs, discriminatory sales or compensating taxes (on imports), special foreign exchange taxes, exemptions from various domestic taxes, subsidized borrowing rates, and marginal-deposit requirements on imports."[38]

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[36] A similar measure has been used in Carlos Diaz-Alejandro, "Exchange Rates and Terms of Trade in the Argentina Republic, 1913-1976," in *Trade Stability, Technology and Equity in Latin America*, ed. Moshe Syrquin (Orlando: Academic Press, 1982).

Using equations (2) and (3), the expression for the OTB given in equation (1) can be transformed into

$$OTB = (1 - t_x/1 + t_m) = (EER_x/EER_m). \quad (4)$$

The benchmark estimates of t_x, t_m, and OTB for 1971 are first derived based on the weighted averages of Baldwin's 1971 EER estimates for various categories of imports and exports. In view of the trade liberalization measures implemented in 1970-71, which removed much of the import and foreign exchange restrictions introduced in 1968-69, the use of 1971 as a benchmark year is appropriate. The estimated EER_x for that year is 5.96 and the EER_m is 8.46; hence, OTB = 0.704, $t_m = (EER_m/R) - 1 = 0.316$, and $t_x = 1 - (EER_x/R) = 0.073$. This implies that there was price discrimination due to trade policy in 1971 against export production in favor of import substitution.

For other years during 1950-80, it is possible to estimate t_x and t_m, based on equations (2) and (3), in two ways, using: first, the Baldwin-Senga estimates of EER_x and EER_m; and second, Central Bank data on wholesale price indexes in Manila for export products (P_x) and imported commodities (P_m), and on unit value indexes (in U.S. dollars) for exports (P_x^*) and imports (P_m^*).[39] One difficulty with using the Central Bank price indexes is that P_x^* and P_m^* are Paasche indexes (with current year weights), while P_x and P_m are Laspeyres with 1965 base year weights. As indicated in Chapter 3, the structure of Philippine exports changed markedly during the 1970s, as the share of new industrial exports increased at the expense of traditional agricultural exports. This makes virtually noncomparable the temporal movements of P_x^* and P_x in the 1970s. Because there were no quantitative restrictions on exports during 1950-80 (except on exports of logs toward the end of the period), using the Baldwin-Senga estimates of EER_x is the more reasonable alternative in estimating t_x.

Annual values of the implicit export tax rate so derived are presented in the first column of Table 5. They indicate a very small direct export subsidy of 1.0-1.5 percent during the 1950s and even lower rates in the 1960s. The introduction of stabilization taxes or traditional exports in 1970 led to positive implicit tax rates through 1973, which subsequently reverted to negative rates (except in 1976) as taxes on some major export products were waived due to sharp declines in world commodity prices and as direct subsidies to export producers weighed more heavily. Overall, the range of −6.0 to 7.3 percent does not seem to represent, by developing-country standards, a substantial direct tax or subsidy to exports.

Because imports have been subject to varying degrees of direct controls and quantitative restrictions, most extensively during the 1950s, the EER estimates for imports derived by Baldwin and Senga, which do not include the scarcity premium due to such restrictions, cannot be used for calculating the implicit tariff rate. What can be done, however, is to derive t_m from the Central Bank indexes of wholesale and trade unit values of imported and export goods. Because the composition of Philippine imports did not change significantly during

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[37] Baldwin, *Foreign Trade Regimes;* and Kunio Senga, "A Note on Industrial Policies and Incentive Structures in the Philippines; 1949-80," *Philippine Review of Economics and Business* 20 (September-December 1983): 299-305. The annual EER estimates for various product categories are given in the Appendix, Table 17.

[38] Baldwin, *Foreign Trade Regimes*, pp. 84-85.

[39] Annual values of these indexes are given in the Appendix, Table 18.

Table 5—Implicit export tax rates, implicit and average tariff rates, and overall trade bias, 1950-80

Year	Implicit Export Tax Rate	Implicit Tariff Rate	Average Tariff Rate	Overall Trade Bias
1950	−0.010	1.205	0.003	0.458
1951	−0.010	1.280	0.202	0.443
1952	−0.010	1.906	0.202	0.348
1953	−0.015	1.707	0.202	0.375
1954	−0.015	1.678	0.199	0.379
1955	−0.015	1.599	0.210	0.391
1956	−0.015	1.445	0.262	0.415
1957	−0.015	1.570	0.268	0.395
1958	−0.015	1.644	0.283	0.384
1959	−0.015	1.704	0.549	0.375
1960	−0.011	1.852	0.536	0.354
1961	−0.011	1.981	0.423	0.339
1962	−0.006	0.756	0.382	0.573
1963	−0.006	0.726	0.356	0.583
1964	−0.006	0.728	0.345	0.582
1965	−0.005	0.708	0.389	0.588
1966	−0.005	0.697	0.366	0.592
1967	−0.008	0.658	0.371	0.608
1968	−0.008	0.515	0.382	0.665
1969	−0.008	0.658	0.380	0.608
1970	0.055	0.287	0.368	0.734
1971	0.073	0.316	0.322	0.704
1972	0.034	0.301	0.399	0.743
1973	0.033	0.184	0.353	0.817
1974	−0.009	0.051	0.388	0.961
1975	−0.025	0.050	0.388	0.976
1976	0.009	0.152	0.388	0.860
1977	−0.019	0.150	0.388	0.886
1978	−0.056	0.204	0.405	0.831
1979	−0.051	0.333	0.405	0.788
1980	−0.060	0.220	0.405	0.869

Sources: Derived from the Appendix, Table 17, which is based on Robert E. Baldwin, *Foreign Trade Regimes and Economic Development: The Philippines* (New York: National Bureau of Economic Research, 1975); and Kunio Senga, "A Note on Industrial Policies and Incentive Structures in the Philippines: 1949-80," *Philippine Review of Economics and Business* 20 (September-December 1983): 299-305.

1950-80, the two sets of indexes are comparable.[40] The calculated annual values of t_m are shown in the second column of Table 5. The marked differences of the t_m values over the three decades are striking. From 1950 to 1960 the domestic price of importables exceeded the foreign price, on the average, by 163 percent. The average implicit tariff rate went down to 68 percent during 1962-69, and further declined to 20 percent during 1970-80.

The third column of Table 5 reports the calculated values of the average tariff rate implied by the Baldwin-Senga estimates of the effective exchange rates for imports (EER_m), which, as pointed out above, do not take into consideration the protective effect of quantitative import restrictions. They are understandably much lower in the 1950s compared to the corresponding values of the implicit tariff rate. The difference is seen to be significantly smaller in the 1960s, reflecting the effects of the decontrol program implemented early in the decade. Finally, one finds that, for many years during the 1970s, the average tariff rate was even higher than the implicit rate, reflecting the widespread exemptions from tariffs and other import taxes granted to government-favored industrial enterprise, including (but not exclusively) those registered under the Investment Incentives Act of 1967 and the Export Incentives Act of 1970.

Based on the implicit export tax and tariff rates calculated above, annual values of the OTB from 1950 to 1980 are obtained and presented in the last column of Table 5. Because the OTB values were consistently less than one, it appears that the Philippine trade policy throughout the entire period favored producers of import-competing goods over export producers. However, there was an increasing OTB trend, implying a decreasing bias against trade. The intensity of bias (represented by the deviation of the OTB value from one) is seen to be highest in the 1950s, as might be expected from a period of comprehensive import and foreign exchange controls. The policy reform in the early 1960s appears to have favored export production, as reflected in the increasing OTB. Finally, it seems that exporting was further encouraged in the 1970s by fiscal and other incentives to export producers. However, these incentives did not fully offset the still significant price bias in favor of import-competing production. After 1975 the increasing trend of the OTB was reversed, as export subsidies declined during the second half of the decade. The average values of OTB during the subperiod broadly reflect the extent of price discrimination against export producers in the aggregate during the three major phases in the evolution of the country's foreign trade regime: 1950-61, 0.388; 1962-69, 0.600; and 1970-80, 0.763.

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[40] These estimates represent weighted averages of the EER_x estimates derived by Baldwin and Senga for traditional and new exports (see the Appendix, Table 17). The weights used for 1950-69 are based on the 1960 shares in total exports, 0.905 for traditional exports and 0.095 for new exports. For 1970-80 the annual shares of these two export categories are used. The marked export diversification that occurred in the 1970s is reflected in the rising share of new exports from 0.114 in 1970 to 0.504 in 1980.

Relative Incentives Among Tradable Product Categories

The concept of OTB provides a useful summary indication of the influence of domestic price policies on relative production incentives between exportables and importables. Such an aggregate measure, however, conceals possible differences in the effects on different classes of export and import-competing products. In the Philippine context this is an important consideration in view of the nature of trade and exchange rate policies adopted during the postwar period.

Based on the evolution of the country's foreign trade regime, it is necessary for the purposes of the study to distinguish between "essential" and "nonessential" consumer goods imports and between "traditional" and "new" exports. The two principal food crops, rice and corn—import-competing throughout most of the postwar period—are in the essential consumer good (EC) import category, while the major export crops such as sugar and coconut are classified as traditional exports (TX). On the other hand, imports of most industrial consumer goods, especially light manufactures, are considered nonessential (NEC), their domestic production being promoted through direct trade controls in the 1950s and by high tariffs since the early 1960s. Also, since 1970 the expansion of new exports (NX), consisting largely of manufactured goods and to a limited extent nontraditional agricultural and mining products, has been officially encouraged: the average values of the effective exchange rates for these categories of tradable goods, based on the Baldwin-Senga estimates, are given for 1950-59, 1960-69, and 1970-80 in Table 6.

It is evident from the markedly higher EER values for NEC imports that the trade regime indeed favored industrial import substitution. As noted earlier, the EER values for the "control period" of the 1950s even understate the implicit protection to import-competing production, in particular of nonessential consumer goods. Relative incentives due to trade and exchange rate policies tended to be increasingly biased against the production of traditional agricultural exports. The average EER for this product category relative to NEC imports decreased from 0.549 in the 1950s to 0.327 in the 1960s and 0.259 in the 1970s.

Table 6—Average effective exchange rates, by product category, 1950-59, 1960-69, and 1970-80

Product Category	1950-59	1960-69	1970-80
Traditional exports (TX)	2.000 (0.549)	3.459 (0.327)	6.602 (0.259)
New exports (NX)	2.294 (0.629)	3.704 (0.351)	8.018 (0.315)
Essential consumer good (EC) imports	2.064 (0.566)	3.906 (0.370)	8.136 (0.320)
Nonessential consumer good (NEC) imports	3.645	10.563	25.459

Sources: Derived from the Appendix, Table 17, which is based on Robert E. Baldwin, *Foreign Trade Regimes and Economic Development: The Philippines* (New York: National Bureau of Economic Research, 1975); and Kunio Senga, "A Note on Industrial Policies and Incentive Structures in the Philippines: 1949-80," *Philippine Review of Economics and Business* 20 (September-December 1983): 299-305.

Note: Numbers in parentheses indicate ratios of effective exchange rates (EER) for a given product category to EER for NEC imports.

Based on the annual values of the EER ratios in Table 7, one observes a continuing bias in favor of import-competing industrial production from 1950 to 1980. Indeed, it is remarkable that, even in the 1970s when a more outward-looking development strategy was being promoted by the government, the bias against agricultural export products continued. In the case of industrial exports, the existing biases of the trade regime were being offset, at least in part, by fiscal and financial incentives provided to registered enterprises under the Export Priorities Act of 1970, as well as the development of export infrastructure specifically directed to manufactured exports. The annual values of the EER ratio for traditional (agricultural) exports relative to both new exports and essential consumer good imports (including rice and corn) are seen from the last two columns of Table 7 to be consistently greater than one. Particularly noteworthy are the higher values of the EER ratio of NX/TX in the first half of the 1970s and of EC/TX throughout the decade, indicating the increased policy biases toward production of nontraditional export and import-competing essential consumer goods during those periods.

Relative Incentives to Major Agricultural Products

In examining the differential price effects of Philippine trade and exchange rate policies among agricultural tradables, the major agricultural commodities considered here are the traditional exports, which include coconut, pineapple, tobacco, and abaca, and the import-competing goods, rice and corn.

Analogous to equations (2) and (3), an effective exchange rate for commodity i, representing the number of units of domestic currency (pesos) per U.S. dollar received by exporters or paid by importers of i, can be defined as:

$$EER_i = P_i/P^*_i, \qquad (5)$$

where P_i and P^*_i [illegible] domestic and border prices of commodity i.

The ratio of EER_i to EER_j, the latter denoting the effective exchange rate for the commodity category j(= TX, EC) that includes i, would indicate the extent to which the price effect of the trade regime is more (or less) favorable to commodity i relative to the other commodities included in category j. Subperiod averages of the annual values of EER_i/EER_j are presented in Table 8, calculated from the Baldwin-Senga estimates of EER_j and Central Bank data on wholesale and border prices of the major agricultural products.[41]

Among the traditional export commodities, tobacco shows the lowest values of the EER ratio, indicating relative price discrimination, which became more severe over time. This contributed undoubtedly to the declining profitability of tobacco production. Pineapple appears to have been favored the most in the 1950s, sugar in the 1960s, and coconut in the 1970s.

Relative to other import-competing essential consumer goods, rice benefited from domestic price policies in the 1960s. This was not the case in the next decade, which does not seem consistent with well-publicized government efforts at promoting rice self-sufficiency. With corn, the trade regime was apparently discriminatory in the 1960s but became favorable in the 1970s. Commodity-specific price effects of domestic policy can also be compared within each product category using the bilateral measure

$$RPR_{ik} = (P_i/P_k)/(P^*_i/P^*_k), \qquad (6)$$

which is the relative price ratio between the domestic (farm-gate or wholesale) and border prices of commodities i and k in the same product category. This formulation permits an examination of how the farm-gate price, which is clearly more meaningful than the wholesale price in the assessment of the impact on agricultural production incentives, is being affected by foreign price changes and the trade regime. A change in this index would reflect the *net* movement

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[41] See the Appendix, Tables 19-21.

Table 7—Ratios of effective exchange rates, by product category, 1950-80

	Effective Exchange Rate Ratio				
Year	TX/NEC	NX/NEC	EC/NEC	EC/TX	NX/TX
1950	0.976	1.093	0.976	1.000	1.120
1951	0.590	0.661	0.599	1.015	1.120
1952	0.590	0.661	0.599	1.015	1.120
1953	0.590	0.684	0.599	1.015	1.160
1954	0.599	0.695	1.020	1.020	1.160
1955	0.543	0.630	0.554	1.020	1.160
1956	0.518	0.601	0.547	1.055	1.160
1957	0.485	0.563	0.510	1.050	1.160
1958	0.480	0.556	0.504	1.050	1.160
1959	0.395	0.455	0.427	1.080	1.150
1960	0.319	0.360	0.321	1.009	1.131
1961	0.382	0.420	0.449	1.175	1.101
1962	0.314	0.336	0.373	1.187	1.070
1963	0.313	0.331	0.377	1.205	1.057
1964	0.317	0.335	0.382	1.205	1.057
1965	0.326	0.346	0.359	1.100	1.059
1966	0.334	0.353	0.367	1.100	1.059
1967	0.331	0.354	0.364	1.100	1.069
1968	0.327	0.350	0.360	1.100	1.069
1969	0.327	0.349	0.359	1.100	1.069
1970	0.291	0.370	0.367	1.258	1.270
1971	0.299	0.377	0.366	1.222	1.260
1972	0.312	0.367	0.367	1.175	1.174
1973	0.290	0.339	0.359	1.239	1.169
1974	0.280	0.366	0.344	1.230	1.308
1975	0.280	0.356	0.344	1.230	1.274
1976	0.279	0.312	0.344	1.230	1.116
1977	0.279	0.328	0.344	1.231	1.173
1978	0.280	0.342	0.350	1.251	1.225
1979	0.279	0.337	0.348	1.244	1.208
1980	0.279	0.337	0.348	1.244	1.207

Sources: Derived from the Appendix, Table 17, which is based on Robert E. Baldwin, *Foreign Trade Regimes and Economic Development: The Philippines* (New York: National Bureau of Economic Research, 1975); and Kunio Senga, "A Note on Industrial Policies and Incentive Structures in the Philippines: 1949-80," *Philippine Review of Economics and Business* 20 (September-December 1983): 299-305.

Notes: TX is traditional exports; NEC is nonessential consumer good imports; NX is new imports; and EC is essential consumer good imports.

of the domestic (farm-gate or wholesale) price of commodity i relative to k (the reference commodity) after taking into account the accompanying changes in the foreign prices of the two commodities. Hence, RPR_{ik} represents a measure of the extent to which the production of commodity i is being favored (or discriminated against), relative to commodity k, by domestic price policy.

Coconut and rice are used as the reference commodities for the traditional export and import-competing categories, respectively. As before, the foreign price is represented by the unit values of exports (f.o.b.) and imports (c.i.f.). The domestic price is represented either by the wholesale price in Manila or the farm-gate price. Although the latter is more appropriate for comparing production incentives, it has the disadvantage of being farther away (vis-à-vis the wholesale price) from the relevant point in the marketing chain.[42]

It is evident from Table 9 that the two sets of RPR_{ij} values, based alternatively on wholesale and farm-gate prices, have some significant differences. The wholesale-price-

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[42] Data limitations preclude adjustment for marketing margin.

Table 8—Average effective exchange rate ratios (EER_i/EER_j)

Commodity	1950-59	1960-69	1970-80
Coconut (TX)	0.976	0.966	1.070
Sugar (TX)	1.030	1.036	0.963
Pineapple (TX)	1.118	0.907	1.031
Tobacco (TX)	0.829	0.654	0.548
Abaca (TX)	1.008[a]	1.013	1.013
Rice (EC)	. . .	1.078	0.890
Corn (EC)	. . .	0.754	1.093

Sources: Basic data are from Central Bank of the Philippines, *Statistical Bulletin*, various issues; Robert E. Baldwin, *Foreign Trade Regimes and Economic Development: The Philippines* (New York: National Bureau of Economic Research, 1975); and Kunio Senga, "A Note on Industrial Policies and Incentive Structures in the Philippines: 1949-80," *Philippine Review of Economics and Business* 20 (September-December 1983): 299-305.

Note: EER_i/EER_j denotes the ratio of the effective exchange rate for commodity i (coconut, . . . , corn) to that for commodity category j (= TX, EC), which includes i; TX denotes traditional exports and EC essential consumer goods.

[a] Based on data for 1950 and 1955.

based estimates indicate that, on the whole (referring to the entries in the second to the last column), only tobacco was not favored by domestic price policies relative to coconut, and that corn was slightly discriminated against vis-à-vis rice. However, based on farm-gate prices (last column of the table), one finds that, in addition to tobacco, there was also significant price discrimination against pineapple. Furthermore, corn was heavily favored over rice. It would appear therefore that some of the relative price effects of the trade regime at the wholesale market were not transmitted fully to the farmer.

There are nonetheless some common qualitative inferences that can be made from the two sets of RPR_{ij} values. One is that, throughout 1950-80, tobacco growers suffered more from domestic price policies than coconut producers. The other traditional export product that declined in importance over the years, abaca, was neither penalized nor favored more heavily than coconut. Finally, as can be seen from the last row of Table 9, the price effect of the trade regime that favored rice over corn in the 1960s was reversed in the 1970s.

Relationship Between Farm-Gate and Wholesale Prices

The analysis above uses wholesale prices in Manila and the farm-gate prices of individual commodities to represent domestic prices. For comparison with border prices (representing foreign prices), Manila wholesale prices seem the most appropriate of available domestic price data sets, inas-

Table 9—Relative price ratios (RPR_{ij}), 1950-80

	1950-59		1960-69		1970-80		1950-80	
Commodity	World Price	Farm-gate Price	World Price	Farm-gate Price	World Price	Farm-gate Price	World Price	Farm-gate Price
j = coconut								
i = sugar	1.055	1.340	1.072	0.826	0.900	1.194	1.005	1.122
pineapple	1.145	0.648	0.939	0.366	0.964	0.826	1.014	0.620
tobacco	0.857	0.598	0.677	0.427	0.512	0.978	0.677	0.593
abaca	1.033[a]	0.940[a]	1.049	0.806	0.947	0.926	1.008	0.892
j = rice								
i = corn	. . .	. . .	0.700	0.822	1.228	2.231	0.977[b]	1.560[b]

Sources: Basic data are from Philippines, National Economic and Development Authority, *Philippine Statistical Yearbook* (Manila: NEDA, 1975, 1982, and 1985); and Central Bank of the Philippines, *Statistical Bulletin*, various issues.

Note: $RPR_{ij} = (P_i/P_j)/(P^*_i/P^*_j)$, where P and P* denote domestic (wholesale or farm-gate) and border prices, respectively.

[a] Based on data for 1950 and 1955.

[b] Based on 1960-80 data.

much as Manila is the country's principal port. As indicated above, however, the farm-gate price is most relevant to agricultural producers. Farmers are expected to respond to changes in farm-gate prices, which, as pointed out earlier, do not appear to correspond closely to the movements of wholesale prices, at least for some commodities. The empirical relationship between farm-gate and wholesale prices of the major agricultural products for which data are available are examined more systematically in the following.

By definition,

$$P_w = P_f + M, \qquad (7)$$

where P_w and P_f are the wholesale and farm-gate prices, respectively, and M is the marketing margin. Logarithmic differentiation leads to the following expression for the proportionate change in the farm-gate price:

$$\hat{P}_f = (P_w/P_f)\,\hat{P}_w - (M/P_f)\,\hat{M}, \qquad (8)$$

where the hat ($\hat{}$) above a variable denotes proportionate change.

Suppose that the marketing margin changes with the wholesale price as follows:

$$\hat{M} = a + b\hat{P}_w, \qquad (9)$$

where a and b are constants. Substitution into equation (8) yields

$$\hat{P}_f = -aM/P_f + c\hat{P}_w, \qquad (10)$$

where $c = (P_w/P_f - bM/P_f)$.

Because $(P_w/P_f - bM/P_f) = 1$ from equation (8), the coefficient c, which indicates the percentage change in the farm-gate price due to a 1 percent change in the wholesale price, will be greater or less than one as b is less or greater than one. Therefore, if the elasticity of the farm-gate price with respect to the wholesale price is less than unity ($c < 1$), one would expect the marketing margin to increase or decrease at a faster rate than the wholesale price. For instance, if over a specified period the wholesale price increased, $c < 1$ would imply that the marketing margin increased even more. One should also note that the special case of $c = 0$ arises when $b = P_w/M$.

Estimates of c can be derived for the major agricultural products by regressing log P_f on log P_w, using annual data for 1950-69[43] and 1970-80. The need to distinguish between the two periods is warranted by the increased government participation in the marketing of agricultural products and the more rapid rise in oil prices (and hence transport costs) during the 1970s.[44]

Except for rice and corn in the pre-1970 period, the coefficient estimates are less than one (Table 10), which suggests that

Table 10—Coefficient estimates in the regression of log P_f on log P_w

Commodity	1950-69	1970-80
Rice	1.047[a] (0.162)	0.870 (0.042)
Corn	1.012[a] (0.142)	0.956 (0.265)
Coconut	0.969 (0.091)	0.591 (0.163)
Sugar	0.499 (0.121)	0.308[b] (0.255)
Pineapple	0.791 (0.186)	0.833 (0.277)
Tobacco	0.762 (0.260)	0.998 (0.002)
Abaca	0.651 (0.205)	0.976 (0.242)

Notes: P_f and P_w are farm-gate and wholesale prices, respectively. Numbers in parentheses are standard errors of coefficient estimates.

[a] The observation period is 1960-69 for this commodity.

[b] The coefficient is not statistically significant at the 5 percent level.

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[43] Because of data limitations, the subperiod 1960-69 is used for rice and corn.

[44] It should also be noted that a few agricultural products in the wholesale market have already undergone some processing, for example, milled rice, centrifugal sugar, and canned pineapple. The cost of such processing needs to be interpreted as part of the marketing margin as defined in equation (7).

the marketing margin increased as a proportion of the wholesale price. Alternatively stated, price increases in the wholesale market were not fully transmitted to the farm gate. The coefficient estimates show higher values for pineapple, tobacco, and abaca in 1970-80, indicating a stronger link between farm-gate and wholesale prices (presumably due to the reduced reliance on foreign markets). In each of the remaining commodities, the marketing role of the government increased significantly during the 1970s. The coefficient values for the country's principal food crops—rice and corn—declined slightly, which may reasonably be attributed to the increased transport cost occasioned by the higher real price of fuel. For the two major export crops, however, the sharp decline in the coefficient from 1950-69 to 1970-80 indicates the extent to which the marketing margin had increased, relative to the wholesale and farm-gate prices, beyond what can be reasonably attributed to higher transport costs. This would seem to support the view that coconut and sugarcane farmers were effectively taxed in the 1970s, not only by domestic pricing policies but also by the increased government intervention in marketing those products (see Chapter 4).

6

EFFECTS ON RELATIVE INCENTIVES BETWEEN TRADABLE AND HOME GOODS

This chapter investigates the extent to which the foreign trade regime in the Philippines has affected the relationship between tradable and home goods prices. An analytical discussion is first given that examines the general equilibrium effects of trade policy on the structure of domestic prices among exportables, importables, and home goods. This is followed by a statistical estimation of the incidence equations linking the domestic price of exportables relative to home goods to the domestic price of exportables relative to importables, the latter directly influenced by trade policy. The estimation results provide the basis for representing quantitatively the indirect price effects of the trade regime. As in the preceding chapter, special attention is given to the effects on agricultural production incentives.

Analytical Framework

In the simple model of a small economy in which three goods are produced, namely, exportables, importables, and home goods, trade policy directly affects the domestic price of exportables relative to importables, which in turn affects the domestic price of exportables relative to home goods. If foreign trade is in balance, the equilibrium properties of the model can be analyzed in terms of the equilibrium in the home goods market.[45] This approach is used in deriving the equilibrium price relationships among the three goods. For subsequent application to Philippine data, two classes of exportables are distinguished: traditional agricultural export products and other exports.

The domestic price ratios among exportables, importables, and home goods are indicators of relative incentives to producers and at the same time of relative costs to consumers. These relative price variables, therefore, determine the supply of and demand for each of the three commodity categories at any given time.

The demand and supply functions for home goods can be represented by

$$D_h = D_h(P_m/P_h, P_x/P_h, Z_h), \qquad (11)$$

and

$$S_h = S_h(P_m/P_h, P_x/P_h, C_p), \qquad (12)$$

where

D_h = demand for home goods,

S_h = supply of home goods,

P_m = domestic price of importable goods,

P_x = domestic price of exportable goods,

P_h = domestic price of home goods,

Z_h = total expenditure in terms of home goods, and

C_p = productive capacity of the economy, determined by the existing domestic resources and technology.

The activity variables Z_h and C_p are expected to change over time. They are usually assumed to be fixed, however, in a comparative static analysis of price effects. Differentiating equations (11) and (12) while holding Z_h and C_p constant yields

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[45] See Rudiger Dornbusch, "Tariffs and Nontraded Goods," *Journal of International Economics* 4 (1974): 177-185; Larry A. Sjaastad, "Commercial Policy, 'True' Tariffs, and Relative Prices," in *Current Issues in Commercial Policy and Diplomacy*, ed. John Black and Brian Hindley (New York: St. Martin's Press, 1980), pp. 26-51; and Jorge Garcia Garcia, *The Effects of Exchange Rates and Commercial Policy on Agricultural Incentives in Colombia: 1953-1978*, Research Report 24 (Washington, D.C.: International Food Policy Research Institute, 1981).

$$\hat{D}_h = \varepsilon_m(\hat{P}_m - \hat{P}_h) + \varepsilon_x(\hat{P}_x - \hat{P}_h), \qquad (13)$$

and

$$\hat{S}_h = \eta_m(\hat{P}_m - \hat{P}_h) + \eta_x(\hat{P}_x - \hat{P}_h), \qquad (14)$$

where ε_m and ε_x are the demand elasticities for home goods with respect to the relative prices of importables and exportables, respectively; η_m and η_x are the corresponding supply elasticities; and the hat (ˆ) over a variable denotes a proportionate change.

Setting $\hat{D}_h = \hat{S}_h$ to examine the comparative static properties of the model,

$$\theta_m(\hat{P}_m - \hat{P}_h) + \theta_x(\hat{P}_x - \hat{P}_h) = 0, \qquad (15)$$

where $\theta_m = \varepsilon_m - \eta_m$ and $\theta_x = \varepsilon_x - \eta_x$.

Therefore,

$$[\theta_m(\hat{P}_m - \hat{P}_x) + \theta_m(\hat{P}_x - \hat{P}_h)] + \theta_x(\hat{P}_x - \hat{P}_h) = 0,$$

and hence

$$\hat{P}_x - \hat{P}_h = \omega(\hat{P}_x - \hat{P}_m), \qquad (16)$$

where $\omega = \theta_m/(\theta_m + \theta_x)$. Equation (16) is a necessary relationship among the domestic prices of exportables, importables, and home goods when the economy is displaced, in a comparative static sense, from one equilibrium state to another. Note that ω is positive and less than one if $\theta_m, \theta_x > 0$; that is, the cross-price elasticities of *excess* demand for home goods are positive.[40] Also, the incidence parameter ω will be greater the higher (lower) is the degree of substitutability in consumption and production between home goods and importables (exportables). For any given change in P_x and P_m due, for example, to changes in trade and exchange rate policies, ω determines uniquely the induced change in the domestic price of exportables relative to home goods.

Equation (16) can be transformed into an expression for the real exchange rate, defined as the ratio of the nominal exchange rate R to the price of home goods. Using the expressions for P_x and P_m given in equations (2) and (3) in the preceding chapter,

$$\hat{P}_x = \hat{T}_x + \hat{R} + \hat{P}^{*}_x, \qquad (17)$$

and

$$\hat{P}_m = \hat{T}_m + \hat{R} + \hat{P}^{*}_m. \qquad (18)$$

When $\hat{P}^{*}_x, \hat{P}^{*}_m = 0$ and equations (17) and (18) are substituted into equation (16) to eliminate P_x and P_m, then

$$\hat{R} - \hat{P}_h = -[\omega\hat{T}_m + (1 - \omega)\hat{T}_x], \qquad (19)$$

which shows explicitly the effect of trade policy, represented by T_m and T_x, on the real exchange rate, under the assumption of unchanged foreign prices.

It follows that

$$\hat{P}_m - \hat{P}_h = -(1 - \omega)(\hat{T}_x - \hat{T}_m), \qquad (20)$$

and

$$\hat{P}_x - \hat{P}_h = \omega(\hat{T}_x - \hat{T}_m), \qquad (21)$$

which indicates explicitly the effects of trade restrictions on the domestic prices of importables and exportables relative to home goods.

Distinguishing between agricultural and nonagricultural export goods, equation (17) can be modified to yield

$$\theta_m(\hat{P}_m - \hat{P}_h) + \theta_{ax}(\hat{P}_{ax} - \hat{P}_h) + \theta_{nx}(\hat{P}_{nx} - \hat{P}_h) = 0, \qquad (22)$$

where P_{ax} and P_{nx} are the domestic prices of agricultural and nonagricultural export products, respectively, and $\theta_{ax} = \varepsilon_{ax} - \eta_{ax}$ and $\theta_{nx} = \varepsilon_{nx} - \eta_{nx}$, the θ's, ε's, and η's being defined as before but in reference to the two classes of export goods.

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[40] As pointed out by Dornbusch, this condition does not require that home goods and tradable goods are substitutes both in production and in demand, or that exportables and importables are necessarily substitutes or complements (Dornbusch, "Tariffs and Nontraded Goods").

Let $\omega_m = \theta_m/\theta$, $\omega_{ax} = \theta_{ax}/\theta$, and $\omega_{nx} = \theta_{nx}/\theta$, where $\theta = \theta_m + \theta_{ax} + \theta_{nx}$. Equation (20) can then be written

$$\hat{P}_h = \omega_m \hat{P}_m + \omega_{ax} \hat{P}_{ax} + \omega_{nx} \hat{P}_{nx}, \qquad (23)$$

or

$$\hat{P}_{ax} - \hat{P}_h = \omega_m(\hat{P}_{ax} - \hat{P}_m) + \omega_{nx}(\hat{P}_{ax} - \hat{P}_{nx}). \qquad (24)$$

Equation (23) expresses $\hat{P}_h$ as a weighted average of the proportionate changes in the domestic prices of the three categories of tradable goods. In equation (24) the domestic price of agricultural export products relative to home goods is seen to depend first on the structure of domestic prices among the three classes of tradable goods, and second, on the incidence parameters ω_m and ω_{nx}.

Analogous to equations (19), (20), and (21), the effects of trade restrictions on the real exchange rate and the relative prices of the three classes of tradable goods (relative to home goods) can be explicitly shown as

$$\hat{R} - \hat{P}_h = -[\omega_m \hat{T}_m + \omega_{nx} \hat{T}_{nx} + (1 - \omega_m - \omega_{nx})\hat{T}_{ax}], \qquad (25)$$

$$\hat{P}_m - \hat{P}_h = \omega_{nx}(\hat{T}_{ax} - \hat{T}_{nx}) - (1 - \omega_m)(\hat{T}_{ax} - \hat{T}_m), \qquad (26)$$

$$\hat{P}_{nx} - \hat{P}_h = \omega_m(\hat{T}_{ax} - \hat{T}_m) - (1 - \omega_{nx})(\hat{T}_{ax} - \hat{T}_{nx}), \qquad (27)$$

and

$$\hat{P}_{ax} - \hat{P}_h = \omega_m(\hat{T}_{ax} - \hat{T}_m) + \omega_{nx}(\hat{T}_{ax} - \hat{T}_{nx}), \qquad (28)$$

where $\hat{T}_{ax} = 1 - t_{ax}$, $t_{nx} = 1 - t_{nx}$, and t_{ax} and t_{nx} are the implicit tax rates of agricultural and nonagricultural exports, respectively.

Estimating the Incidence Equations

Available price data permit a disaggregation of export goods into the traditional agricultural export products and other exports, but not a disaggregation of import goods into the exchange control categories (including nonessential consumer goods). This is the underlying reason for having only an aggregate P_m variable in the analytical discussion above. In applying them to Philippine data, P_{ax} is defined as index of the domestic prices of traditional agricultural export products and P_{nx} as the index of domestic prices of other export goods.[47] To represent the price of home goods (P_h), a weighted average of the Central Bank wholesale price index for "locally produced commodities for home consumption" and the two consumer price index components for housing and services are calculated.[48] Each of these price indexes suffers from the usual index number problem, including deficiencies of coverage and in measuring quality changes. The problem is particularly severe in the case of the commodities component of the price index of home goods because its composition could have been affected by the observed changes in the protection structure from the 1950s to the 1970s. However, to exclude this component entirely from P_h

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[47] Using wholesale price data from the Appendix, Table 20, P_{ax} is calculated as the weighted average (based on 1965 export value shares) of the wholesale price indexes for the five major agricultural export products. P_{nx} can then be computed,

$$s_{ax} P_{ax} + (1 - s_{ax}) P_{nx} = P_x,$$

where P_x is the aggregate domestic export price index and s_{ax} (= 0.601) is the export value share of agricultural products in 1965. The annual values of P_{ax} and P_{nx} so calculated are given in the Appendix, Table 22.

[48] The weights used are based on the value added shares computed from the aggregated 12-sector input-output transaction table for 1965.

would be quite unrealistic in the Philippine context.[49]

It should be remembered that the analysis is based on comparative statics, assuming that total expenditure (Z_h) and productive capacity (C_p) remain constant. Using historical data invalidates this assumption, warranting the inclusion of Z_h and C_p as shift variables in the regression equation. However, because they are highly correlated, only C_p is included, represented by real GNP, in both the aggregative and disaggregative specifications. Also, since equations (16) and (24) represent domestic price relationships when external trade is in balance, a balance-of-trade variable (BOT) is included, defined as the ratio of the trade balance (exports minus imports) to exports, as an additional explanatory variable in each of the estimating equations. Lastly, serial correlation of the error terms appears to be significant in the initial regressions for each equation; the Cochrane-Orcutt iteration technique is used to correct for first-order autocorrelation.

The estimation results for the aggregative equation (expressed in natural logarithms), including specifications with and without C_p and BOT, are:[50]

$$\log P_x/P_h = \underset{(-0.15)}{-0.005} + \underset{(9.25)}{0.858}\log P_x/P_m + \underset{(5.50)}{0.323}\log C_p + \underset{(2.21)}{0.095}\,\mathrm{BOT}, \qquad (29)$$

$\bar{R}^2 = 0.941, \quad \rho = 0.637;$

$$\log P_x/P_h = \underset{(-0.16)}{-0.032} + \underset{(9.23)}{0.846}\log P_x/P_m + \underset{(2.87)}{0.121}\,\mathrm{BOT}, \qquad (30)$$

$\bar{R}^2 = 0.930, \quad \rho = 0.959;$

and

$$\log P_x/P_h = \underset{(-0.48)}{-0.107} + \underset{(8.44)}{0.873}\log P_x/P_m, \qquad (31)$$

$\bar{R}^2 = 0.911, \quad \rho = 0.961.$

Each of the coefficient estimates is statistically highly significant, and more than 90 percent of the variance of the dependent variable is explained. The estimates of the incidence parameter (coefficient of $\log P_x/P_m$) are seen to lie within a narrow range from 0.846 to 0.873, indicating robustness across different specifications. It may be inferred that, in the Philippine case, trade and exchange rate policies biased against exportables relative to import-competing production have also tended to reduce substantially the relative incentive to produce export goods vis-à-vis home goods.

Considering only traditional agricultural exports, the estimated equation is

$$\log P_{ax}/P_h = \underset{(2.12)}{0.081} + \underset{(7.04)}{0.659}\log P_{ax}/P_m + \underset{(4.08)}{0.412}\log P_{ax}/P_{nx} + \underset{(4.94)}{0.298}\log C_p + \underset{(2.61)}{0.127}\,\mathrm{BOT}, \qquad (32)$$

$\bar{R}^2 = 0.986, \quad \rho = 0.745.$

Again the statistical goodness of fit is excellent. Other things remaining the same, a 10 percent rise in the domestic price of importables (for example, due to tariffs) is associated with a 6.6 percent decline in the domestic price of agricultural export products relative to home goods. On the other hand, a 10 percent increase in the domestic price of other export products (for example, due to subsidies to industrial exports) leads to a 4.1 percent fall in the price of agricultural export goods relative to home goods.

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[49] This is in view of the significant share of domestic products that enjoy natural protection from foreign competition due to prohibitive marketing cost, as reflected in the lack of response of the domestic price to foreign price changes. See Ma. Cecilia T. Gonzalez, "Money, Nontraded Goods, and Devaluation: The Experience of the Philippines, 1967-1983," University of California, Berkeley, May 1985 (mimeographed).

[50] Ordinary Least Squares estimation was used on annual data for the period 1950-76. Numbers in parentheses are t-values of the coefficient estimates.

It is necessary to point out that the estimated values of the incidence parameters represent the average values over the entire observation period. While statistical tests for differences in subperiod estimates can easily be done, it is not clear that such an exercise is desirable in the absence of an a priori judgment on the directions in which the underlying supply and demand elasticities might change from one subperiod to the next.

Aggregative Price Effects on Exportables and Importables

Based on the estimated values of the incidence parameters, the extent to which the domestic prices of tradable goods relative to home goods were affected by the foreign trade regime during 1950-80 can be quantified. In considering the price effects at the aggregate level, equations (20) and (21) imply that

$$\log RPR_{mh} = (1 - \omega)(\log T_m - \log T_x), \quad (33)$$

and

$$\log RPR_{xh} = -\omega(\log T_m - \log T_x), \quad (34)$$

where $RPR_{mh} = (P_m/P_h)/(P_m^*/P_h^*)$ and $RPR_{xh} = (P_x/P_h)(P_x^*/P_h^*)$, the asterisk (*) denoting the price under an unbiased trade regime, that is, when the implicit tariff and export tax rates are zero (T_m, $T_x = 1$).

The relative price ratios RPR_{mh} and RPR_{xh} indicate the direction and magnitude of the price effects of trade policy (represented by T_m and T_x) on importables and exportables relative to home goods. A value of unity for either measure implies a neutral price effect. It should be emphasized that the price effects embodied in these two measures are of a comparative static nature, assuming an adjustment period long enough for the direct and indirect effects of trade policy to work themselves out within the general equilibrium framework described earlier.

The calculated annual values of RPR_{mh} and RPR_{xh} are given in the first two columns of Table 11.[51] The effect of trade policy on production incentives for importables relative to home goods is consistently positive ($RPR_{mh} > 1$), and consistently negative on production incentives for exportables ($RPR_{xh} < 1$). It would appear that trade restrictions effectively pushed up the relative price of importables vis-à-vis home goods by an average of 14.5 percent during the 1950-61 period of direct controls, by 7.5 percent from 1962 to 1969, and by 2.6 percent during 1970-80. On the other hand, the domestic price of exportables relative to home goods was being reduced by 58.7 percent, 35.5 percent, and 14.1 percent during those three periods. These observations imply that the incentive bias of the foreign regime against home goods relative to importables decreased significantly over the entire period, and that the bias in favor of home goods relative to exportables was reduced even more significantly.

Differential Incentive Effects Based on Disaggregate Incidence Parameters

Distinguishing between traditional agricultural exports and other exports, the estimated incidence parameters in equation (29) can be used to evaluate the policy-induced relative incentive effects. Analogous to (33) and (34), the following relationships can be derived from equations (26), (27), and (28).

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[51] Estimation of the aggregative price effects (vis-à-vis home goods) of the foreign trade regime on importables (RPR_{mh}) and exportables (RPR_{xh}), as well as of the disaggregative price effects on agricultural exports (RPR_{axh}), and nonagricultural exports (RPR_{nxh}) involves the calculation of annual values of the "power" of the import tariffs and export taxes: T_m ($= 1 + t_m$), T_x ($= 1 - t_x$), T_{ax} ($= 1 - t_{ax}$), and T_{nx} ($= 1 - t_{nx}$), where the t's are the implicit tax rates. Appendix Table 23 presents the time series for each of the T's.

Table 11—Calculated values of relative price ratios between tradable and home goods, 1950-80

Year	RPR^{a}_{mh}	RPR_{xh}	RPR^{d}_{mh}	RPR_{nxh}	RPR_{axh}
1950	1.117	0.512	1.250	0.635	0.567
1951	1.123	0.497	1.264	0.621	0.554
1952	1.162	0.404	1.373	0.529	0.473
1953	1.149	0.479	1.321	0.566	0.488
1954	1.148	0.435	1.316	0.570	0.491
1955	1.148	0.446	1.303	0.582	0.501
1956	1.133	0.470	1.276	0.605	0.522
1957	1.141	0.451	1.298	0.586	0.505
1958	1.146	0.440	1.311	0.575	0.496
1959	1.149	0.431	1.325	0.564	0.490
1960	1.159	0.411	1.359	0.539	0.476
1961	1.166	0.395	1.400	0.515	0.468
1962	1.082	0.620	1.178	0.718	0.671
1963	1.080	0.629	1.177	0.721	0.682
1964	1.080	0.629	1.178	0.720	0.682
1965	1.078	0.634	1.172	0.727	0.686
1966	1.077	0.638	1.170	0.730	0.689
1967	1.073	0.653	1.156	0.745	0.698
1968	1.060	0.705	1.121	0.791	0.740
1969	1.073	0.653	1.156	0.745	0.679
1970	1.045	0.767	1.034	0.975	0.767
1971	1.051	0.740	1.035	0.956	0.759
1972	1.043	0.775	1.046	0.924	0.787
1973	1.029	0.841	1.015	0.981	0.839
1974	1.006	0.967	0.923	1.133	0.866
1975	1.003	0.980	0.933	1.116	0.876
1976	1.022	0.879	1.017	0.972	0.871
1977	1.017	0.901	0.996	1.002	0.854
1978	1.019	0.894	0.993	1.000	0.812
1979	1.034	0.816	1.036	0.925	0.766
1980	1.020	0.886	1.005	0.979	0.812

Source: Basic data are from Central Bank of the Philippines, *Statistical Bulletin*, various issues.

Notes: The relative price ratio (RPR_{ih}) is defined as the actual relative price of a tradable good (i) to home goods (h) divided by the relative price under an unrestricted trade regime.

The subscripts denote the following product categories: m, importables; x, exportables; ax, agricultural (traditional) exports; nx, other exports; and h, home goods. The superscripts a and d indicate that the calculated RPR_{mh} was based on the aggregative and disaggregative estimates of ω, respectively.

Entries under the first and second columns are based on the aggregative estimates of the incidence parameters; those under the remaining columns are based on the disaggregative estimates.

$$\log RPR_{mh} = (1 - \omega_m)(\log T_m - \log T_{ax}) - \omega_{nx}(\log T_{nx} - \log T_{ax}), \quad (35)$$

$$\log RPR_{nxh} = (1 - \omega_{nx})(\log T_{nx} - \log T_{ax}) - \omega_m(\log T_m - \log T_{ax}), \quad (36)$$

and

$$\log RPR_{axh} = -\omega_m(\log T_m - \log T_{ax}) - \omega_{nx}(\log T_{nx} - \log T_{ax}), \quad (37)$$

where $RPR_{mh} = (P_m/P_h)/(P^*_m/P^*_h)$, $RPR_{nxh} = (P_{nx}/P_h)/(P^*_{nx}/P^*_h)$, and $RPR_{axh} = (P_{ax}/P_h)/(P^*_{ax}/P^*_h)$ are the relative price ratios between each tradable good category (m = importables, ax = traditional agricultural export products, nx = other export goods) and home goods.

As shown in the last three columns of Table 11, the calculated values of the relative price ratios generally indicate that significant disincentives were given to the production of traditional agricultural exports, and to a lesser extent, of nontraditional (manufactured and agricultural) export products. On the other hand, domestic production of import-competing goods appears to have been favored over home goods, at least until the early 1970s.

A declining trend is evident from each of the two sets of RPR_{mh} values based on the aggregative and disaggregative incidence parameters (shown respectively in the first and third columns of the table). However, one finds the annual values in the latter time series decreasing more sharply, starting at comparatively higher values in the 1950s and coming down to generally lower values in the 1970s. Such comparison suggests the size of the aggregation error if the two classes of exportables were not distinguished.

The last two columns of Table 11 document differences in the incidence of trade policy on traditional and new export products over the three decades. The marked improvement in RPR_{nxh} values is evident from the following averages: 0.574 during 1950-61; 0.737 during 1962-69; and 0.997 during 1970-80. By contrast, traditional agricultural exports were more heavily penalized than new exports throughout the period. While the RPR_{axh} values show an increasing trend over the entire period, the average of 0.819 during 1970-80 still reflected a heavy bias against traditional agricultural exports at a time when general expansion of export capacity was being officially promoted by the government. This could explain, at least in part, the marked expansion of nontraditional exports, both agricultural and industrial, during the 1970s.

7

THE REAL EXCHANGE RATE AS AN INTERMEDIATE POLICY VARIABLE

Agricultural output in the Philippines has a high degree of tradability, given the dominance of export and import-competing products (see Chapter 3). Overvaluation of the domestic currency—or, to use a now standard terminology, an "overvalued exchange rate"—resulting from a protective trade regime acts as a tax on tradable goods, depressing their prices (in domestic currency terms) relative to home goods. This distorts the incentive structure and penalizes agriculture by encouraging resource movement toward home goods production. Because home goods are a larger part of nonagricultural than of agricultural production, the effect of exchange rate overvaluation on domestic relative prices also encourages a shift in resources toward nonagricultural production. The exchange rate, therefore, plays an intermediary role in transmitting the effects of trade policy on agricultural production incentives. As is discussed below, there are other trade-related influences on the exchange rate.

It is, of course, the real exchange rate, rather than the nominal exchange rate (which the government can control directly), that is relevant in the assessment of the relative profitability of tradable goods. This chapter first discusses how the real exchange rate is defined and measured in the present study. After an examination of the behavior of the real exchange rate in the Philippines during the period 1950-84, the extent to which it has been affected by three major sources of real exchange rate misalignment is investigated.

The initial focus is on the distortionary effect of restrictive trade policy on the real exchange rate. Import restrictions that protect domestic industries, for example, lower industrial imports relative to their probable level in an unprotected market. This tends to overvalue the real exchange rate. The question to be addressed below is: What would have been the time profile of the real exchange rate had an unbiased foreign trade regime (that is, with zero implicit tariff and export tax rates) been adopted in the Philippines?

Another important policy concern relates to the sharp changes in the country's external terms of trade, particularly since the mid-1970s. The effect on the real exchange rate induced by the actual movements in the terms of trade from 1950 to 1984, making use of 1971 as the base year, is examined below. It is worth noting that the terms of trade index for 1971 closely approximates the average values over the longer periods 1970-72 and 1969-73. The year 1971 also seems appropriate as a benchmark period because it preceded the marked instability in international prices.

In view of the substantial trade deficits that characterized many years, especially after 1973, it is also of policy interest to investigate the extent to which such trade imbalances pushed down the real exchange rate (that is, overvalued the domestic currency), or pulled up the real exchange rate in those few years of trade surplus relative to what it would have been under balanced trade. The combined effects of the three sources of real exchange rate misalignment are analyzed in the final section of this chapter.

The Real Exchange Rate: Definition and Measurement

The real exchange rate can be broadly defined as the real worth of foreign exchange in terms of the domestic currency. Analytical discussions in which foreign prices are taken as given (as in the preceding chapter) typically represent the real exchange rate simply as a ratio of the nominal exchange rate to a general price level of the small country in question. In empirical work that traces the movement of the real exchange rate over time, foreign prices cannot be assumed constant. Since the real worth of foreign exchange (for example, the U.S. dollar) in one year is not the same as in the next if foreign prices have changed, it is necessary to refer to a basket of goods whose price is a "real dollar." For present purposes, the real exchange rate is defined to represent, for a given year, the foreign price of tradable goods relative to home goods expressed in domestic currency; that is,

$$r = RP^*/P_h, \qquad (38)$$

where

r = real exchange rate;

R = nominal exchange rate in pesos per U.S. dollar;

P^* = index of foreign prices in U.S. dollars of tradable goods; and

P_h = index of home goods prices.

Movements of the real exchange rate can occur through movements of the nominal exchange rate, through movements of foreign prices (exogenous to the small country), or through movements of the general level of internal prices and costs (affecting the price index of home goods). Because domestic prices are affected by nominal exchange rate changes to an extent determined by the accompanying monetary and fiscal policies, there is no one-to-one correspondence between the nominal and real exchange rates. Also, as shown analytically in the preceding chapter, a more restrictive trade policy, other things remaining the same, leads to a lower value of the real exchange rate (that is, an appreciation of the domestic currency). There are, of course, other influences on the real exchange rate, as will be discussed below.

Annual values of two measures of the real exchange rate for 1950-84 are calculated in Table 12 and plotted in Figure 2. Two indicators of foreign price movements are used, based on: first, the simple average of the unit value indexes for exports and imports (in U.S. dollars)[52]; and second, the wholesale price indexes for the country's two principal trading partners, Japan and the United States, with adjustment for changes in their currencies' bilateral exchange rate.[53] The base year chosen is 1971, one year after the large devaluation that resulted from the floating of the nominal exchange rate, beginning in February 1970. A nearly balanced current account was achieved in that year. The year 1971 also preceded dramatic developments in the international economy, such as the world food crisis of 1972-73, the commodity boom of 1972-74, the oil price shocks of 1973-74 and 1979-80, and the drastic decline in world commodity prices in the early 1980s.

As can be seen from the time profiles shown in Figure 2, there are significant differences between the two measures of the real exchange rate in 1974 and 1979-80. This is explained by the sharp price increases in imported crude oil (on which the Philippines is highly dependent) in those years, which were not immediately reflected in the wholesale price indexes of Japan and the United States.

Both measures of the real exchange rate indicate relative stability in the 1950s, a period of fixed nominal exchange rates (see Table 12) and low domestic and foreign inflation rates. The trade liberalization measures implemented in 1962 and 1970, including the nominal exchange rate adjustments, seem to have effectively brought about an immediate *real* devaluation. In the 1962 case, the favorable impact appears to have been slightly

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[52] This indicator is used in, for example, Power, "Response to Balance of Payments Crises in the 1970s."

[53] Japan and the United States each accounted for about one-third of the total value of Philippine exports and imports during 1950-84, other trading partners contributing less than 5 percent. The foreign price index was calculated as: $P^* = (WPI_s + r_{sj} WPI_j)/2$, where WPI_s and WIP_j are the wholesale price indexes for the United States and Japan, respectively, and r_{sj} is an index of the U.S. dollar per yen exchange rate (see the Appendix, Table 24). Including minor trading partners in the calculation did not significantly change the time profile of the foreign price index.

Table 12—Calculation of the real exchange rate, 1950-84

Year	Nominal Exchange Rate R	Price Index for Home Goods P_h	Foreign Price Index P_1^*	Foreign Price Index P_2^*	Real Exchange Rate r_1	Real Exchange Rate r_2
	(P/U.S. $)				(P/U.S. $)	
1950	2.00	54.5	83.1	70.5	3.05	2.59
1951	2.00	56.5	90.5	81.6	3.21	2.89
1952	2.00	55.2	78.1	81.3	2.83	2.94
1953	2.00	55.0	86.3	81.1	3.14	2.95
1954	2.00	54.1	78.8	80.9	2.92	2.99
1955	2.00	53.7	74.8	80.3	2.79	2.99
1956	2.00	58.1	75.9	83.4	2.61	2.87
1957	2.00	57.0	77.5	85.8	2.72	3.01
1958	2.00	56.3	80.1	83.7	2.84	2.97
1959	2.00	55.9	84.7	84.1	3.03	3.01
1960	2.02	57.4	84.7	84.6	2.97	2.97
1961	2.02	59.0	81.2	84.9	2.78	2.91
1962	3.83	60.0	82.3	84.3	5.25	5.38
1963	3.91	62.5	87.2	84.8	5.45	5.30
1964	3.91	65.3	87.1	85.0	5.21	5.09
1965	3.90	67.1	88.6	86.2	5.15	5.02
1966	3.90	68.3	89.7	88.8	5.12	5.07
1967	3.90	71.7	91.4	89.6	4.97	4.87
1968	3.90	75.8	98.3	91.2	5.06	4.69
1969	3.90	76.8	99.3	93.9	5.04	4.77
1970	5.90	88.0	101.7	97.3	6.83	6.53
1971	6.43	100.0	100.0	100.0	6.43	6.43
1972	6.67	107.1	99.5	110.1	6.19	6.85
1973	6.76	121.4	136.6	133.5	7.61	7.43
1974	6.78	166.3	226.0	161.0	9.21	6.56
1975	7.25	182.6	205.1	168.7	8.14	6.70
1976	7.44	214.8	191.9	177.1	6.65	6.14
1977	7.40	224.2	205.1	194.2	6.77	6.41
1978	7.36	242.6	218.5	226.6	6.63	6.88
1979	7.38	291.4	251.8	242.6	6.38	6.15
1980	7.51	293.1	300.6	276.2	7.70	7.08
1981	7.90	335.0	317.9	293.8	7.50	6.93
1982	8.50	379.6	268.7	280.6	6.02	6.28
1983	11.10	413.6	274.6	286.2	7.37	7.68
1984	16.70	567.1	301.4	289.3	9.05	8.52

Sources: Basic data are from Central Bank of the Philippines, *Statistical Bulletin*, various issues; and International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, various years).

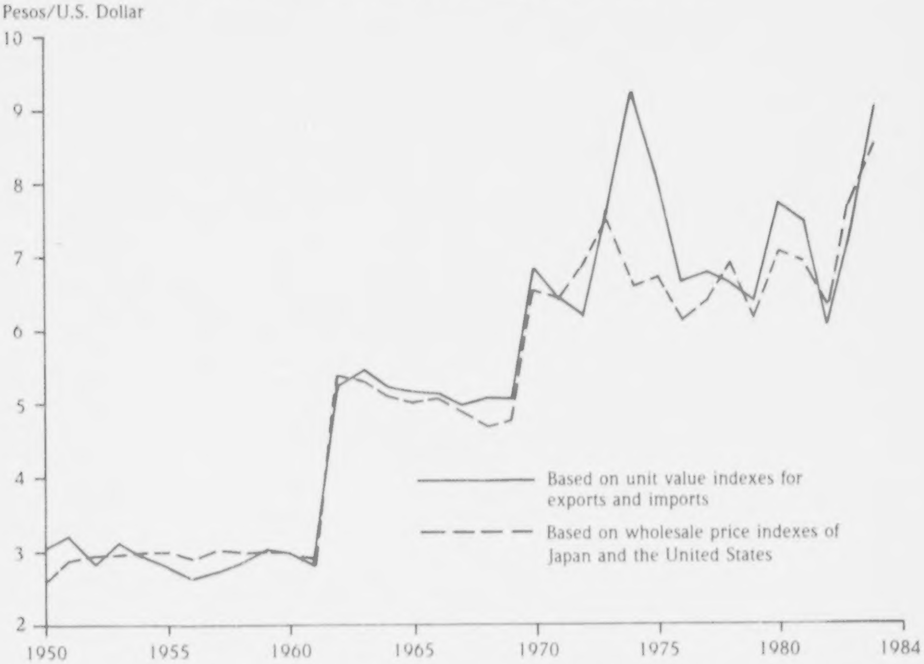
undercut subsequently by the differential changes in domestic and foreign prices. The real exchange rate gradually decreased until the end of the decade. On the other hand, the record since 1970 shows fluctuating values of the real exchange rate following the unstable foreign prices of the country's principal imports (crude oil) and traditional exports, with greater variability characterizing the real exchange rate measure based on the unit values of imports and exports.

In view of the strong correlation between the two measures of the real exchange rate (except in the atypical years of sharp changes in the price of oil imports), only the one based on the wholesale price indexes of the country's principal trade partners (that is, r_2 based on P_2^*) is used in this study.

Exchange Rate Distortion Due to Trade Restrictions

Under the assumption of trade balance, the real exchange rate was shown analyti-

Figure 2—Time profiles of the real exchange rate, 1950-84



Sources: Basic data are from Central Bank of the Philippines, *Statistical Bulletin*, various issues; and International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, various years).

cally in the preceding chapter to be influenced by trade policy, as represented by the implicit tariff and export tax rates, and by foreign prices. Holding constant the foreign prices of importables and exportables, equation (19) implies that

$$\log(r^u/r) = \omega \log(1 + t_m) + (1 - \omega)\log(1 - t_x), \quad (39)$$

where r^u is the real exchange rate associated with an unbiased or free (unrestricted) trade policy (t_m, $t_x = 0$). A measure of the distortion in the real exchange rate due to trade policy is given by the ratio r^u/r, which can be evaluated, using equation (39), given the incidence parameter and existing implicit tariff and export tax rates.

Distinguishing between the traditional agricultural export products and other exports, equation (25) leads similarly to

$$\log(r^u/r) = \omega_m \log(1 + t_m) + \omega_{nx}\log(1 - t_{nx}) + (1 - \omega_m - \omega_{nx})\log(1 - t_{ax}), \quad (40)$$

from which the exchange rate distortion index r^u/r can be calculated, given values of the incidence parameters ω_m and ω_{nx}, the implicit tariff rate t_m, and the implicit export tax rates t_{ax} and t_{nx} (as estimated in Chapters 5 and 6).

It is clear from the expressions for log (r^u/r) in equations (39) and (40) that trade restrictions in the form of tariffs and quotas on imports ($t_m > 0$), as well as subsidies on exports ($t_x < 0$) tend to lower the real exchange rate relative to its free trade value. Intuitively, an export subsidy (import tariff) raises the domestic price of exportables (importables), which encourages their domestic production and induces lower domestic consumption, leading to an increase in exports (a decrease in imports). Resources are reallocated toward the tradable goods sector away from home goods production. The reduced output of home goods results in an increase in their domestic price, which lowers the real exchange rate. Such overvaluation of the domestic currency, or, what is the same thing, the undervaluation of foreign exchange, cannot be eliminated by nominal exchange rate adjustment. It can be corrected only at its source, that is, by removing the trade restrictions (making t_x, $t_m = 0$).

The calculated annual values of r^u/r from 1950 to 1980, based on equations (39) and (40), are plotted in Figure 3. They are consistently greater than one, implying an overvalued exchange rate throughout the period due to trade policy. However, a generally declining trend is evident over the years in either measure of real exchange rate distortion. The largest deviation of the real exchange rate from the "unrestricted trade" value occurred in 1950-61, the period of import and foreign exchange controls. The index averaged 2.30 and 2.00, based on the aggregative and disaggregative incidence parameters. After decontrol and peso devaluation in the early 1960s, the real exchange rate distortion was reduced, the average values of the index computed at 1.56 and 1.44 during 1962-69. Finally, with nominal exchange rate flexibility and less restrictive trade policies during 1979-80, the corresponding average values of r^u/r are calculated to be 1.17 and 1.20.

Based on either set of estimates, the trade liberalization measures implemented in 1970 were effective in lowering the degree of exchange rate overvaluation through 1975, after which the index rose again, reaching a peak of 1.29 in 1979. Based on the 1978-80 average values, it would appear that the Philippine peso was overvalued by 22 to 24 percent due to trade restrictions toward the end of the decade.

Exchange Rate Effect of Changes in the Terms of Trade

Allowing foreign prices to change, one can transform equation (19) in the preceding chapter into the following expression for the proportionate change in the real exchange rate:

$$\hat{r} = \hat{R} + \hat{P}^* - \hat{P}_h = -\omega\hat{T}_m - (1-\omega)\hat{T}_x + (1-\omega-\beta)(\hat{P}^*_m - \hat{P}^*_x), \qquad (41)$$

where

$$P^* = (P^*_x)^{\beta}(P^*_m)^{1-\beta} \qquad (42)$$

is the foreign price index represented by a Cobb-Douglas aggregation of the foreign price indexes of exportables (P^*_x) and of importables (P^*_m), and β is the elasticity of P^* with respect to P^*_x (equivalently, the geometric weight of P^*_x in P^*).

Other things remaining the same (including trade policy, so that $\hat{T}_m, \hat{T}_x = 0$), the effect of changes in the external terms of trade on the real exchange rate is seen from equation (41) to be determined by the coefficient $(1-\omega-\beta)$. An index of the terms-of-trade effect on the real exchange rate, r^t/r, can be defined therefore as

$$\log(r^t/r) = (1-\omega-\beta)(\log P^*_x/P^*_m - \log P^*_{xo}/P^*_{mo}), \qquad (43)$$

where P^*_{xo}/P^*_{mo} is the base year terms of trade and r^t is the exchange rate with unchanging terms of trade. As with the other measures developed above, the index r^t/r is a comparative static measure, assuming constant total expenditure (income) and productive capacity of the economy.[54] It is clear from equation (41) that terms-of-trade movements can affect the real exchange rate positively or negatively, depending on the sizes of ω and β. Higher values of the incidence

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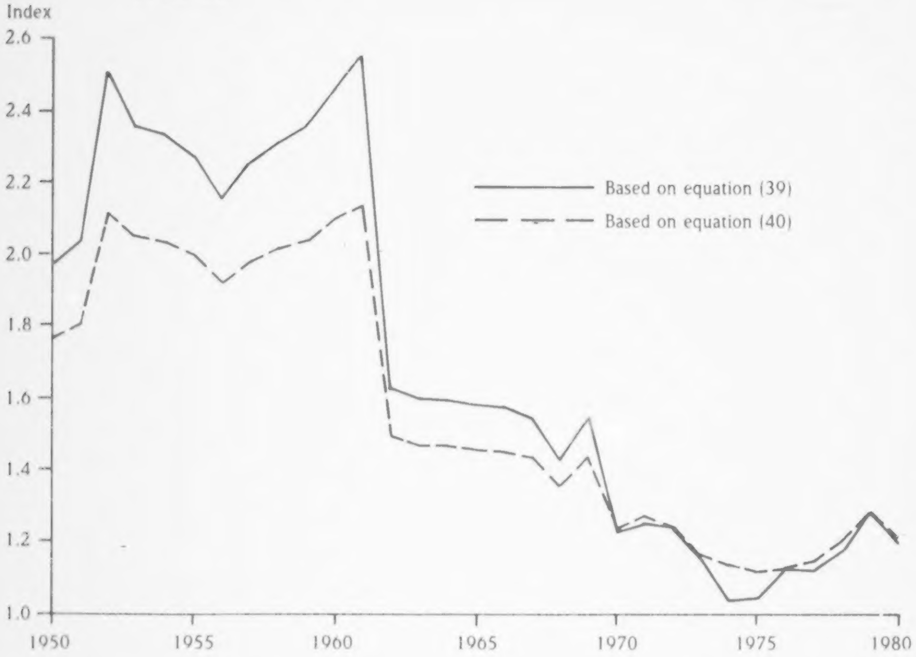
[54] In effect, equation (43) captures only the substitution effect of a change in the terms of trade, but not the income effect, which tends to lower the real exchange rate if the terms of trade improve. See Alberto Valdés, "Impact of Trade and Macroeconomic Policies' Impact on Agricultural Growth: The South American Experience," in *Economic and Social Progress in Latin America: 1986 Report* (Washington, D.C.: Inter-American Development Bank, 1986), pp. 161-183.

Figure 3—Index of exchange rate distortion due to trade restrictions (r^u/r), 1950-80



Notes: Alternative values of the exchange rate distortion index, r^u/r, are calculated from equation (39),

$$\log(r^u/r) = \omega \log(1 + t_m) + (1 - \omega)\log(1 - t_x),$$

based on the aggregate incidence parameter ω, and from equation (40),

$$\log(r^u/r) = \omega_m \log(1 + t_m) + \omega_{nx} \log(1 - t_{nx}) + (1 - \omega_m - \omega_{nx})\log(1 - t_{ax}),$$

based on the disaggregate incidence parameters ω_m, ω_{ax}, and ω_{nx}.

parameter ω, reflecting greater substitutability between home goods and importables and of the elasticity β, reflecting greater influence of export prices on the foreign price index, make it more likely that $(1 - \omega - \beta)$ will be negative, and hence the effect on r will be positive; that is, an improvement in the terms of trade should lead to an appreciation of the real exchange rate.

In contrast with the index r^u/r, derived earlier, which reflects a domestic policy distortion (due to trade restrictions), there is no policy role in the determination of r^t/r because, under the small-country assumption, a country's external terms of trade are determined exogenously. However, terms-of-trade changes do get transmitted to the domestic price structure through the former's effect on the real exchange rate, which, as will be shown later, can have significant repercussions on agricultural production incentives.

To calculate the index r^t/r, β is first estimated by regressing $\log P^*/P^*_m$ on $\log P^*_x/P^*_m$, based on equation (42). Ordinary least squares applied to annual data from 1950 to 1984 yield a statistically significant estimate of $\beta = 0.582$. Using this and the earlier estimated value of the aggregate incidence parameter ($\omega = 0.858$), the index of exchange rate distortion due to terms-of-trade movements from the 1971 base year value can be estimated, based on equation (43).

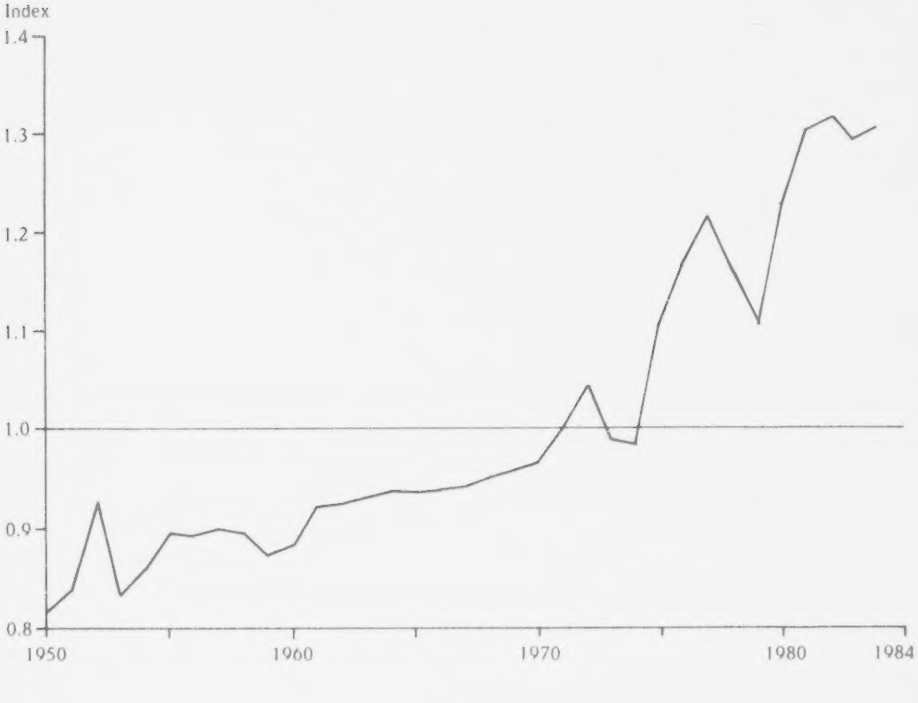
The annual values of r^t/r, so calculated, are shown in Figure 4. The country's generally deteriorating terms of trade are reflected in the steeply rising trend of the index. External terms-of-trade changes are seen to have significantly affected the real exchange rate in both directions. In the 1950s the real exchange rate would have been only 87 percent of the actual rate, on the average, had the terms of trade been the less favorable base period value. On the other hand, the deterioration of the country's terms of trade from 1975 to 1984 was such that the real exchange rate would have been higher by 22 percent had the terms of trade remained at the 1971 level.

Exchange Rate Distortion Due to Trade Imbalance

The effects of changes in trade policy and in the external terms of trade as measured by the indexes r^u/r and r^t/r are based on the induced movement of the economy from one static equilibrium situation to another. It may be recalled from the comparative static analysis in Chapter 6 that foreign trade is assumed to be always in balance. In fact, domestic policy can accommodate an imbalance in the external accounts, resulting in what can be called disequilibrium overvaluation (in the case of trade deficits) of the real exchange rate. For instance, a trade deficit in any given year can be financed by drawing down international reserves or by foreign borrowing and other forms of capital movements influenced by macroeconomic policies. This leads to an exchange rate that is overvalued relative to the exchange rate that would have prevailed without such accommodation.

An existing imbalance in the external accounts that is not sustainable distorts the exchange rate, artificially overvaluing or undervaluing the domestic currency. But what is "sustainable" is difficult to define. Ab-

Figure 4—Index of exchange rate distortion due to changes in terms of trade (r^t/r), 1950-84



sence of "excessive" foreign borrowing and "adequate" international reserves are frequently invoked guideposts that, however, only beg the question. For present purposes, what is estimated is simply the degree to which the exchange rate is distorted by accommodation of the observed trade surplus or deficit in a given year.

As shown in the third column of Table 13, deficits in Philippine trade transactions seem to be the rule rather than the exception. The comprehensive system of import and foreign exchange controls during the 1950s apparently did not prevent substantial trade deficits from being incurred. In the three years preceding the 1970 peso devaluation, there was a resurgence of large deficits, averaging $270 million or close to one-third of the country's total export earnings. The trade deficits in the 1950s and 1960s were financed mostly through reserve drawdowns, eventually leading to a drastic reduction in international reserves toward the end of the decade (see the fourth column of Table 13). In the 1970s, accommodation of the massive deficits incurred after the first oil shock of 1973-74 was achieved through external financing. Indeed, there was an accumulation of foreign reserves, which in 1980 totaled $3.14 billion—more than three times the 1973 level of $1.04 billion.

The extent to which the exchange rate was distorted in a given year due to trade imbalance can be quantified using the following index:

$$\log(r^b/r) = T_d/(\varepsilon_x X - \eta_m M), \qquad (44)$$

where r^b is the real exchange rate under balanced trade; T_d, X, and M are the trade deficit, exports, and imports, respectively, in U.S. dollars; and ε_x and η_m are the price elasticities of export supply and import demand. Because equation (44) applies to the small-country case, foreign export demand and import supply are assumed to be perfectly elastic.[55] Based on the findings of an earlier study estimating export supply and import demand functions for the Philippines, $\varepsilon_x = 2.90$ and $\eta_m = -1.43$.[56]

The calculated annual values of r^b/r for 1950-84 are plotted in Figure 5. Had trade been balanced throughout the period, other conditions such as trade policy and the external terms of trade remaining the same, the real exchange rate would have been higher by 3.8 percent in the 1950s, on average, by 2.1 percent during 1960-74, and by as much as 8.0 percent in 1975-84. As indicated above, the latter period witnessed an unprecedented rate of foreign borrowing and expansion of external debt that eventually led to the foreign exchange crisis beginning in late 1983.

Overall Effects on the Real Exchange Rate

It is evident that the effects of trade restrictions, terms-of-trade changes, and trade imbalances on the real exchange rate are additive. Thus, in any given year, there could be an equilibrium exchange rate under existing tariffs and export taxes that is x percent below the equilibrium exchange rate under unrestricted trade with unchanged external terms of trade. With the same trade taxes, a terms-of-trade deterioration could have reduced the equilibrium exchange rate by an additional y percent. (Recall from equation (41) that the real exchange rate is expressed in terms of the trade tax and foreign price variables linearly in proportionate changes.) Finally, accommodation of the observed trade deficit by foreign borrowing or use of reserves could have supported an exchange rate that is z percent below the equilibrium rate. The overall effect of these

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[55] For a derivation of an analogous expression for r^b/r when the price elasticity of foreign demand for the country's exports is not infinite, see Erlinda Medalla, "Estimating the Shadow Exchange Rate Under Alternative Policy Assumptions" in Bautista, Power, et al., *Industrial Promotion Policies in the Philippines*, pp. 79-111.

[56] Aggregate elasticity values were obtained by computing the weighted averages of the estimated export supply and import demand elasticities for various product categories. See Romeo M. Bautista, "Effects of Major Currency Realignment on Philippine Merchandise Trade," *Review of Economics and Statistics* 59 (May 1977): 152-160.

Table 13—Foreign trade indicators, 1950-84

Year	Exports	Imports	Trade Deficit	Total Reserves
		(U.S. $ million)		
1950	331	342	11	299
1951	427	489	62	248
1952	346	421	75	240
1953	398	452	54	244
1954	401	479	78	211
1955	401	548	147	155
1956	453	506	53	161
1957	431	613	182	71
1958	493	559	66	92
1959	530	524	−6	94
1960	560	604	44	127
1961	500	611	111	54
1962	556	587	31	75
1963	727	618	−109	109
1964	742	780	38	123
1965	769	808	39	193
1966	828	853	25	194
1967	822	1,062	240	180
1968	857	1,150	293	161
1969	855	1,132	277	121
1970	1,062	1,090	28	251
1971	1,136	1,186	50	376
1972	1,106	1,230	124	551
1973	1,886	1,597	−289	1,038
1974	2,725	3,143	418	1,504
1975	2,295	3,459	1,164	1,360
1976	2,573	3,634	1,061	1,642
1977	3,151	3,915	764	1,524
1978	3,425	4,732	1,307	1,881
1979	4,601	6,142	1,541	2,416
1980	5,788	7,727	1,939	3,140
1981	5,720	7,946	2,226	2,574
1982	5,021	7,667	2,646	1,711
1983	5,005	7,487	2,482	864
1984	5,391	6,070	679	1,090

Sources: Total reserves are taken from International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, various years); all others are from Philippines, National Economic and Development Authority, *Philippine Statistical Yearbook, 1985* (Manila: NEDA, 1985).

independent influences on the real exchange rate would then be (x + y + z) percent.

Accordingly, using earlier notation, a measure of the combined effects of trade restrictions, terms-of-trade changes, and trade imbalances on the real exchange rate is given by the "competitiveness index":

$$r^o/r = 1 + \sum_i \alpha_i , \qquad (45)$$

where

$$\alpha_i = (r^i/r) - 1;\ i = u, t, b \qquad (46)$$

is the contribution of each of the three influences to the proportionate differences between the actual exchange rate r and a hypothetical exchange rate r^o, the latter being associated with unrestricted trade, unchanged terms of trade, and balanced trade. This index can be interpreted to reflect the degree of price competitiveness in the production of tradable goods relative to home goods.

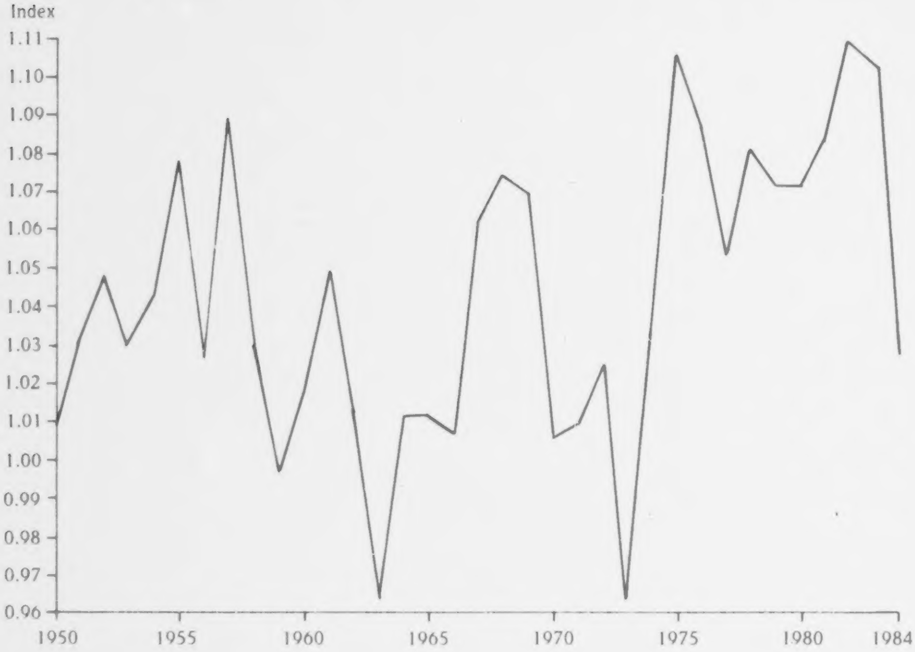
As pointed out above, terms-of-trade movements are an exogenous influence on the real exchange rate. Therefore, the policy-induced exchange rate distortion can be attributed only to the joint effects of trade restrictions and trade imbalance, represented by α_u and α_b using the above notation. Nonetheless, in the analysis of price competitiveness of the tradable goods sector, all three influences on the real exchange rate need to be taken into account.

Table 14 presents the annual values of α_i and r^o/r for 1950-80. Since two sets of r^u/r estimates have been derived above, there are also two alternative values of α_u and the overall index r^o/r for each year.

The first point to note is the consistent overvaluation of the Philippine peso (relative to the hypothetical exchange rate r^o) throughout the period, based on either measure of the competitiveness index. The degree of overvaluation differs significantly over time. Even with favorable external terms of trade in the 1950s, the distortionary effects of trade imbalance and, most dominantly, the heavily protective trade regime of direct controls on imports and foreign exchange resulted in a highly overvalued exchange rate. The index averaged 2.21 (Case A) and 1.91 (Case B) during 1950-61.

The decontrol program and nominal exchange rate adjustment in the early 1960s apparently reduced the real exchange rate overvaluation in a big way. Even so, the high and uneven tariff rates that replaced the system of import and exchange controls still represented a stringent penalty on tradable goods production. The average values of r^o/r from 1962 to 1969 are calculated at

Figure 5—Index of exchange rate distortion due to trade imbalance (r^b/r), 1950-84



1.53 (Case A) and 1.41 (Case B). It should be noted that, in view of the country's favorable terms of trade throughout the 1950s and 1960s, the observed overvaluation of the real exchange rate was entirely policy-induced.

It would appear that the first half of the 1970s constituted the least unfavorable period, from the viewpoint of price competitiveness, for producers of tradable goods. During 1970-74 the overall index of exchange rate effects, based on either measure, declined to an average of about 1.2. This is attributable to the confluence of favorable developments. Domestically, the Philippine peso depreciated markedly in nominal terms, resulting from the adoption of a floating exchange rate system beginning in February 1970. Selective subsidies to export production were introduced by the Export Incentives Act of 1970, which compensated in part for the still pervasive bias against exporting due to tariffs and indirect taxes. Also, the world commodity boom of 1972-74 pushed up the foreign prices of the country's principal exports and consequently the real exchange rate.

With the massive trade deficits, rapid terms-of-trade deterioration, and increasing trade restrictions in the later part of the decade, the real exchange rate overvaluation worsened. The competitiveness index during 1975-80 rose to almost the average of the 1960s (1.41 under Case A and 1.43 under Case B). Of the 41-43 percent disparity between r^o and r, exogenous terms-of-trade movements accounted on average for 17 percent, leaving 24-26 percent as the joint contribution of the two policy-induced sources of exchange rate overvaluation. The latter in turn divides into the trade imbalance component, which is less than 8 percent, and the component due to restrictive trade policy, which is 16-18 percent.

It does not seem farfetched to infer from the above findings that the degree of real

Table 14—Index of overall exchange rate effects (r°/r) and contributions of various sources, 1950-80

Year	α_u		α_t	α_b	Overall Index (r°/r)	
	A	B			A	B
1950	0.974	0.764	−0.182	0.008	1.800	1.590
1951	1.031	0.804	−0.161	0.032	1.902	1.675
1952	1.501	1.116	−0.073	0.048	2.476	2.091
1953	1.355	1.049	−0.168	0.030	2.217	1.911
1954	1.333	1.035	−0.141	0.043	2.235	1.937
1955	1.274	0.995	−0.107	0.078	2.245	1.966
1956	1.158	0.916	−0.109	0.026	2.075	1.833
1957	1.252	0.980	−0.101	0.089	2.240	1.968
1958	1.308	1.017	−0.107	0.030	2.231	1.940
1959	1.353	1.040	−0.130	−0.003	2.220	1.907
1960	1.461	1.099	−0.117	0.018	2.362	2.000
1961	1.557	1.137	−0.078	0.049	2.528	2.100
1962	0.623	0.490	−0.075	0.013	1.561	1.428
1963	0.599	0.466	−0.069	−0.036	1.494	1.361
1964	0.600	0.467	−0.062	0.012	1.550	1.417
1965	0.584	0.457	−0.063	0.012	1.533	1.406
1966	0.575	0.451	−0.061	0.007	1.521	1.397
1967	0.545	0.434	−0.058	0.063	1.550	1.439
1968	0.430	0.351	−0.048	0.074	1.456	1.377
1969	0.545	0.434	−0.041	0.070	1.574	1.463
1970	0.232	0.245	−0.032	0.006	1.206	1.219
1971	0.252	0.272	0	0.010	1.262	1.282
1972	0.247	0.244	0.044	0.025	1.316	1.313
1973	0.150	0.167	−0.011	−0.037	1.102	1.119
1974	0.046	0.138	−0.016	0.034	1.064	1.156
1975	0.047	0.125	0.107	0.106	1.260	1.338
1976	0.128	0.132	0.167	0.087	1.382	1.386
1977	0.130	0.155	0.216	0.053	1.399	1.424
1978	0.182	0.212	0.161	0.081	1.424	1.454
1979	0.289	0.287	0.109	0.072	1.470	1.468
1980	0.196	0.215	0.233	0.072	1.501	1.520

Notes: α_u, α_t, and α_b denote the proportionate exchange rate effects due to trade restrictions, terms-of-trade changes, and trade imbalances, respectively.

Entries under A are based on the aggregate incidence parameter and those under B are based on the disaggregate parameters.

exchange rate distortion bears a significant, negative relationship to the country's ability to prevent a foreign exchange crisis. A highly overvalued exchange rate is bound to lead to a severe balance-of-payments problem sooner or later, as demonstrated by the Philippine experience with the foreign exchange crises of the late 1950s and late 1960s. The policy response in both cases proved adequate only for a short time as the real exchange rate slid back to unsustainable levels after three or four years. The result was an eventual recurrence of the balance-of-payments crisis.

As discussed in Chapter 4, trade liberalization measures were adopted by the government in the early 1980s, as part of a wider program of policy reforms and industrial restructuring to improve the international competitiveness of domestic producers. In particular, the tariff program that aimed to gradually reduce the average level and dispersion of nominal tariff rates from 1981 to 1985 would have reduced significantly the real exchange rate distortion due to trade restrictions. However, from the viewpoint of price competitiveness in tradable goods production, there were concurrently offsetting effects on the real exchange rate arising from the sharply lower terms of trade and large trade deficits financed by foreign borrowing. These are reflected in the estimates of r^t/r and r^b/r as presented earlier, which averaged 1.31 and 1.10 for 1981-83, respectively.

While political developments precipitated the foreign exchange crisis that began in August 1983, some underlying economic factors, as reflected in the increasing real exchange rate overvaluation since the mid-1970s, have made inevitable the recurrence of a balance-of-payments crisis. The mistake was opting for expansionary macroeconomic policies in disregard of the balance of payments, which was also being battered by adverse external terms of trade during 1975-83. Because sociopolitical conditions at the time (for example, the government's tendency to confer economic gains on so-called "crony capitalists") were not conducive to the promotion of efficient economic growth, not only static but also dynamic losses resulted from the pursuit of what were being touted as countercyclical policies.

8

REAL EXCHANGE RATE CHANGES AND AGRICULTURAL PRODUCTION INCENTIVES

The real exchange rate effects arising from trade restrictions, terms-of-trade movements, and trade imbalances having been estimated in the preceding chapter, their transmission to the domestic price structure can now be analyzed. The present focus is on the impact on agricultural prices relative to the prices of home goods and of nonagricultural products. These two relative price measures are partial indicators of the price competitiveness of the agricultural sector, reflecting the relative profitability of producing agricultural products vis-à-vis home goods and nonagricultural products.

This chapter first examines the behavior of domestic agricultural prices relative to the prices of home goods and of nonagricultural products during 1950-84, indicating the significance of sharp changes in the relative price indexes occurring in certain years. The link to real exchange rate movements is then investigated by regression analysis. Finally, using the estimated coefficients representing the response of relative agricultural prices to changes in the real exchange rate and other factors, an examination is undertaken of the extent to which agricultural producers could have benefited, through improved price incentives, from the elimination of the various sources of exchange rate misalignment discussed above.

Agricultural Prices Relative to Home Goods and Nonagricultural Prices

Indexes relating the prices of agricultural goods to home goods (P_a/P_h) and to nonagricultural products (P_a/P_{na}) for 1950-84 are depicted graphically in Figure 6.[57] The time profiles of the two price indexes are similar. This is not surprising, considering that home goods bulk large in nonagricultural output. The two indexes have generally lower values in the 1950s than in subsequent years through 1984, suggesting that the price effects of the regime of import and foreign exchange controls strongly discriminated against agriculture. There was apparently a positive response to the decontrol measures and nominal exchange rate adjustment in the early 1960s, which continued to the end of the decade. The average values of P_a/P_h and P_a/P_{na} in 1962-69 were higher by 22 and 12 percent than those in 1950-61.

By contrast, the favorable effect on relative agricultural prices of the large peso devaluation in 1970 did not seem to last long and was soon negated by other influences. Indeed the values of both price indexes fell almost continuously, beginning in 1973 for P_a/P_h and in 1974 for P_a/P_{na}, until 1982, just before the foreign exchange crisis came to a head in 1983. In 1982 the value of P_a/P_h was 22 percent lower than in 1973, while that of P_a/P_{na} was 26 percent below its 1974 value.

Apart from nominal exchange rate changes, other important influences on the behavior of agricultural prices relative to the prices of home goods and nonagricultural products consisted presumably of the significant changes in foreign prices of the country's principal export commodities, and the various factors responsible for sustaining massive trade deficits since 1974

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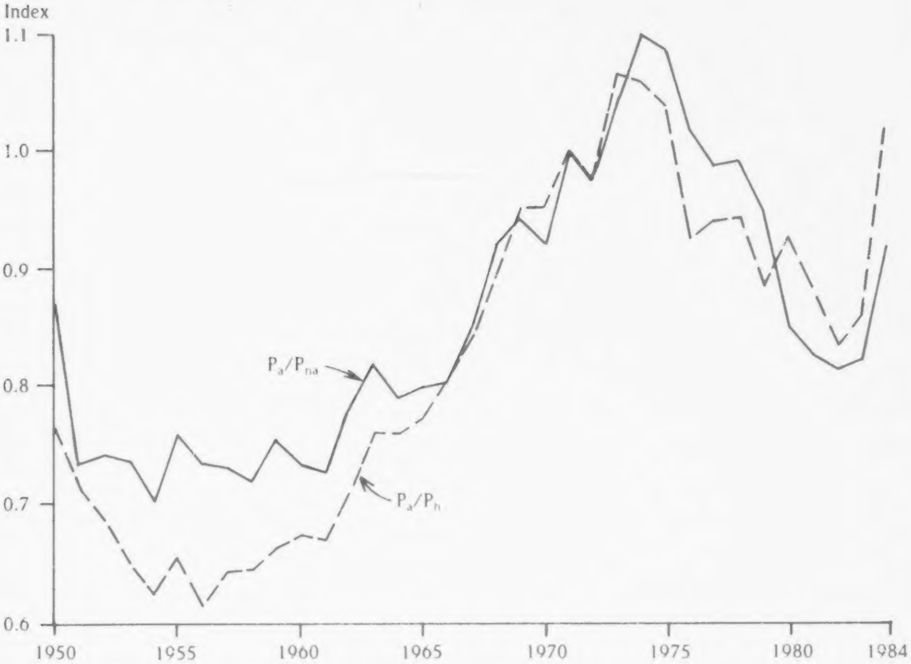
[57] The nonagricultural price index (P_{na}) is calculated from

$$\omega_a P_a + (1 - \omega_a) P_{na} = P_{gdp},$$

where P_a and P_{gdp} are the implicit price indexes for agricultural value added and GDP, respectively, and $\omega_a = (0.295)$ is the share of agricultural value added to GDP in 1971. The annual values of P_{gdp}, P_a, and P_{na} are shown in the Appendix, Table 25.

Figure 6—Relative price indexes of agricultural products to home goods (P_a/P_h) and agricultural to nonagricultural products (P_a/P_{na}), 1950-84



including various aspects of macroeconomic policy (see Chapter 4). All this would have a bearing on the real exchange rate, indicating that it is a basic determinant of domestic agricultural prices relative to those of home goods and nonagricultural products. Indeed, a cursory comparison of the time profiles in Figures 2 and 6 suggests that the real exchange rate bears a positive relationship to the relative domestic prices of agricultural products. A more systematic examination of the effect of the real exchange rate on relative agricultural prices, based on regression analysis, is given in the next section.

Agricultural Prices and the Real Exchange Rate

It was initially hypothesized that, in addition to the real exchange rate, the more direct influences of the implicit tariffs, export taxes or subsidies, and external terms of trade are also important determinants of the relative prices of agricultural products, P_a/P_h and P_a/P_{na}.[58] The results of the preliminary regressions consistently indicate lack of significance of the estimated coefficient of the terms-of-trade variables, suggesting that only its indirect effect through the real exchange rate needs to be considered.[59] Table 15 reports the regression results based on specifications that exclude the terms-of-trade variable. Because the export tax and tariff variables also affect the real exchange rate (as discussed in the preceding chapter), two-stage least squares (TSLS) estimation is used, the terms-of-trade index and a trade deficit variable being chosen as additional instrument variables. Introduction of a few alternative lag structures does not appear to improve the statistical fit. This suggests absence of lagged effects (that is, beyond one year) on domestic relative prices due to changes in the explanatory variables.

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[58] It is possible to express analytically each of these relative price variables in terms of the real exchange rate and the various tradable and home goods components of P_a and P_{na}, which could then be used to estimate the separate influences of those explanatory variables. The data requirements are severe, however. For an attempt to estimate such an equation for P_a/P_h using Argentinean data, see Cavallo, "Exchange Rate Overvaluation."

Table 15—Estimated equations for relative agricultural prices as dependent variables

Independent Variable	Dependent Variable	
	Log P_a/P_h	**Log P_a/P_{na}**
Constant	−0.404	−0.373
Log r	0.398 (9.220)	0.329 (6.180)
Log T_{ax}	0.336 (1.680)	0.446 (2.330)
Log T_{nx}	. . .	−0.112 (−0.930)
Log T_m	. . .	−0.418 (−2.370)
R^2	0.884	0.779

Notes: Estimation is by two-stage least squares using annual data for 1950-80. Numbers in parentheses are t-values.

P_a/P_h represents the domestic price index of agricultural products relative to home goods, and P_a/P_{na} represents agricultural products relative to nonagricultural.

The first column of the table shows a coefficient estimate of 0.398 for the exchange rate variable, implying that a 10 percent increase in the real exchange rate (or a real depreciation of 10 percent) will push up the relative price of agricultural products vis-à-vis home goods by slightly less than 4 percent. The same 10 percent increase in the real exchange rate will lead to a 3.3 percent rise in the domestic agricultural price relative to the price of nonagricultural products, according to the coefficient estimate in the second column. This is understandably a smaller effect because nonagricultural output also includes tradable goods, although to a lesser extent than agricultural output.

The estimated elasticity of P_a/P_h with respect to the export tax variable ($T_{ax} = 1 - t_{ax}$) is seen to be more than 0.3, while that of P_a/P_{na} is more than 0.4. The sign in either case is positive as expected because a rise in the agricultural export tax rate (t_{ax}), which lowers T_{ax}, should lead to a lower price of agricultural products, other things remaining the same. The elasticity estimates suggest that the average agricultural export tax rate of 5.8 percent in 1970-80 directly reduced P_a/P_h by about 2.0 percent and P_a/P_{na} by about 2.6 percent.

Nonagricultural tradables have been subject to import taxes, aimed especially at nonessential consumer goods, but they have also benefited from subsidies to nontraditional export production. The elasticity estimate for $T_{nx} (= 1 - t_{nx})$, where t_{nx} is the negative of the export subsidy rate, has the correct sign but is statistically insignificant, owing presumably to the small share of nontraditional export products in nonagricultural output. For $T_m (= 1 + t_m)$ the elasticity estimate is −0.42, which is significant at the 5 percent level. This indicates that a reduction of the implicit tariff rate from an average of 68 percent during 1962-69 to an average of 20 percent for 1970-80 led directly to an increase in P_a/P_{na} of about 12 percent.

Sources of Exchange Rate Misalignment and Agricultural Prices

The relative price response of agricultural products to changes in the real exchange rate and in the trade tax variables, together with the estimates of exchange rate misalignment derived in Chapter 7, can be used to evaluate their effects on relative agricultural prices vis-à-vis home goods and nonagricultural products. Table 16 contains the results of the calculations distinguishing among the three sources of exchange rate misalignment for four periods representing various stages in the evolution of the country's trade and exchange rate policies (see Chapter 4).[60]

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[59] This is presumably due to, first, the markedly increasing share of manufactured products in total exports since the early 1970s, and second, the sharp changes in the foreign price of oil imports since 1974.

Both direct and indirect effects of trade restrictions on relative agricultural prices are shown in the first four rows of Table 16. During 1950-61, the direct effect of the prevailing import and foreign exchange controls (associated with extremely high values of the implicit tariff rate) was the dominant influence on P_a/P_{na}, which was reduced by more than 100 percent. The indirect effect through the real exchange rate also is not insignificant, as shown by the induced decline in P_a/P_h of about 40 percent. The separate and less significant influences of the favorable terms of trade and trade deficits on relative agricultural prices during the period offset each other to some extent. Overall, the three sources of exchange rate misalignment effectively lowered the domestic agricultural price relative to home goods by 36 percent and relative to nonagricultural products by 100 percent.

Even after the implementation of decontrol measures and nominal exchange rate adjustment in the early 1960s, trade restrictions continued to exert the most important negative influence on domestic agricultural prices. The protective tariff system retained the qualitative biases of the incentive structure against agriculture through the late 1970s. However, the distortionary effect of trade policy on relative agricultural prices continued to diminish.

Overall, the declining trend of price bias against agricultural production was reversed during the second half of the 1970s due to the country's growing trade deficits and deteriorating external terms of trade. These two sources jointly contributed 10 percent of the total decline in P_a/P_h and 8 percent of the decline in P_a/P_{na}. Based on the entries in the last row of Table 16, the combined effects of the three sources of exchange rate overvaluation appear to have reduced domestic agricultural prices in 1975-80 by 19 percent relative to home goods and by 25 percent relative to nonagricultural products. Because the real purchasing power of rural

Table 16—Average proportionate effects of exchange rate misalignment on relative agricultural prices

Source/Period	P_a/P_h	P_a/P_{na}
Effects of trade restrictions		
1950-61	-0.396	-1.026
1962-69	-0.176	-0.438
1970-74	-0.111	-0.215
1975-80	-0.089	-0.174
Effects of terms of trade changes		
1950-61	0.049	0.040
1962-69	0.024	0.020
1970-74	0.001	0.001
1975-80	-0.066	-0.055
Effects of trade imbalance		
1950-61	-0.015	-0.012
1962-69	-0.011	-0.009
1970-74	-0.003	-0.003
1975-80	-0.031	-0.026
Effects from all sources		
1950-61	-0.362	-0.998
1962-69	-0.163	-0.427
1970-74	-0.113	-0.217
1975-80	-0.186	-0.255

Note: P_a/P_h represents the domestic price index of agricultural products relative to home goods, and P_a/P_{na} represents agricultural products relative to nonagricultural.

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[60] An illustrative calculation, yielding the estimated effect on P_a/P_{na} for 1950-61, based on Table 15, is

$$(P_a/P_{na}) = 0.329\,\hat{r} + 0.446\,\hat{T}_{ax} - 0.112\,\hat{T}_{nx} - 0.418\,\hat{T}_{m}.$$

Substituting $\hat{r} = -0.996$, $\hat{T}_{ax} = 0$, $\hat{T}_{nx} = 0.142$, and $\hat{T}_{m} = 1.631$ gives -1.026, which is the entry in the first row, second column of Table 16.

households is determined in part by the agricultural terms of trade, the stimulus to overall economic growth provided by the growth of rural incomes must have been considerably weakened by the market decline in relative agricultural prices from the mid-1970s to the early 1980s (see Figure 6). It is evident from the above findings that the worsening exchange rate overvaluation contributed heavily to the severe deterioration of the agricultural terms of trade during the period.

9

SOME PERSPECTIVES AND CONCLUSIONS

The price bias against agriculture due to trade and exchange rate policies translates into an effective resource transfer out of the agricultural sector that is quite large relative to the amount transferred into agriculture through government spending. In 1980, for example, the latter was about P3.5 billion, based on the national government's budgetary allocations for current operating expenditures and capital outlays.[61] The resource outflow in 1980 for export crop agriculture alone amounted to P 6.6 billion—consisting of P 2.3 billion from explicit export taxes and P 4.3 billion from policy-induced exchange rate overvaluation.[62]

In fact, production of all tradable goods, not just actual exports, is penalized by the overvalued exchange rate. The high degree of tradability of agricultural output makes agricultural incentives particularly dependent on real exchange rate movements. It follows that the implicit resource transfer out of agriculture from overvaluation of the peso has been much larger than would be indicated by considering only export crops.

The need to extract agricultural surplus to finance capital formation in the rest of the economy during development is a widely accepted proposition in development economics. But there are serious questions about the efficiency with which these transferred resources are used in the nonagricultural sectors. In the Philippines, as in most other developing countries where the industrial sector has been highly protected, the distortions in product and factor markets have led to the inefficient use of investment resources for manufacturing and the inability to compete in international markets.[63] Unless such policy-induced distortions are corrected and, given the opportunities for rapid productivity growth in agriculture provided the capital requirements for technological change and rural infrastructure development are met, there is cause for skepticism that agricultural resource transfers can help accelerate the development process. An additional consideration, of course, is the stimulus to nonagricultural production to be induced by increased rural incomes due to rising agricultural productivity.[64] This form of rural growth linkage is at the heart of recent proposals for an agriculture-based development strategy.[65]

Currency overvaluation has evidently imposed a severe penalty on Philippine agriculture beyond the seemingly light tax burden on agricultural exports. In the 1950s and 1960s the policy thrust favoring industrial import substitution entailed heavy protection of manufacturing through a restrictive trade regime, which led to a highly overvalued Philippine peso. In the 1970s and early 1980s nominal exchange rate flexibility and selective export subsidies tended to reduce the degree of exchange rate overvaluation from trade restrictions. However, expansionary policies and massive trade deficits financed by external borrowing severely distorted the real exchange rate, especially during 1975-83, when the country's terms of trade deteriorated markedly. The debt-related foreign exchange crisis that began in late 1983 was triggered by political events that shook business confidence and induced a massive capital flight. However, because of the severity of the exchange rate overvaluation since the mid-1970s, a balance-of-payments crisis was inevitable sooner or later. What the government had touted as "countercyclical" monetary and fiscal policies, which frequently bordered on profligate demand management, became the villain of the piece. Such expansionary macroeconomic policy, adopted in disregard of the balance-of-payments consequences, backfired as the immediate effect on the real exchange rate and the longer-run effect on productivity of the massive foreign borrowing undertaken since 1974 proved disastrous.[66]

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[61] See Table 15.8 in Ponciano S. Intal, Jr. and John H. Power, "The Political Economy of Agricultural Pricing Policies: The Philippines," prepared for the World Bank, University of the Philippines at Los Baños, June 1986 (mimeographed).

[62] Resource transfer out of export crop agriculture due to the overvalued exchange rate is calculated by multiplying crop export earnings ($2 billion) in 1980 by the actual exchange rate (P 7.51 per U.S. $1.00) and by the estimated degree of overvaluation (0.287) for that year from trade restrictions and trade imbalance.

[63] See Bautista, Power, et al., *Industrial Promotion Policies in the Philippines.*

[64] For an empirical analysis in the Philippine context, see Romeo M. Bautista, "Effects of Increasing Agricultural Productivity in a Multisectoral Model for the Philippines," *Agricultural Economics* 1 (1986): 67-85.

[65] See John W. Mellor, *The New Economics of Growth: A Strategy for India and the Developing World* (Ithaca, N.Y.: Cornell University Press, 1976); and Adelman, "Beyond Export Led Growth."

This study shows that trade policy is a dominant source of exchange rate distortion and price bias against agriculture. Although the disincentive effects of trade restrictions were reduced significantly during 1950-80, the penalty on agricultural production remained stringent. Thus during 1975-80, domestic currency overvaluation resulted in the lowering of the domestic agricultural price relative to home goods by an average of 19 percent and relative to nonagricultural products by 25 percent. That the real exchange rate is at least a partial indicator of the competitiveness of agriculture is borne out by the significant relationships obtained empirically between the real exchange rate and relative agricultural prices.

The role of the real exchange rate in influencing agricultural incentives and performance has assumed added significance in view of the recent decline in agricultural production and exports (Chapter 3). If the agricultural sector is to contribute to the country's economic recovery and longer-run growth, not only sector-specific policies, but also the trade and macroeconomic environment that determines the real exchange rate needs to be improved. Moreover, because the existing foreign exchange shortage is the principal constraint to economic growth, it is important that export production, both agricultural and industrial, should be encouraged.

The removal of export taxes (except on logs) in mid-1986 by the new government of Corazon Aquino is a step in the right direction. For too long they were a direct burden to agricultural producers. Industrial export production, on the other hand, has been receiving subsidies on a selective basis, which offset to some extent the general bias in the protection system against exports. The amount of export tax collected was relatively small, accounting for only 1.4 percent of total government revenue during 1980-84. On efficiency grounds, it is preferable to rely as much as possible on land, income, and consumption taxes, rather than on export taxes and tariffs that distort production incentives. Regardless of the source of taxation, the pattern of government expenditure—particularly, the allocation of public investment—needs to be redirected toward agriculture and the rural sector and away from the past bias favoring urban-based, capital-intensive industries. Improvements in rural infrastructure, such as agricultural research, extension, and credit, will serve to increase the agricultural supply response to price incentives. This would enhance the long-run effectiveness of reform in trade and exchange rate policies.

It will be necessary to prevent the real exchange rate from being overvalued. This would require that import restrictions unduly protective of domestic industry be liberalized and that a sustainable trade balance be maintained. A more realistic exchange rate policy would in the long run encourage not only export production but also efficient import substitution in agriculture as well as in the rest of the economy.

Under present conditions of foreign exchange shortage and depressed economic activity, the more immediate challenge facing the new government is how to achieve rapid recovery while moving toward stable, long-run growth. Excessive reductions in expenditure due to IMF-prescribed budgetary and monetary restraints have had severe output and employment repercussions. To achieve economic recovery, these restraints will have to be eased. The government's plan to sharply increase infrastructure expenditures in the rural areas has much to recommend it, not only addressing the existing deficiency in aggregate demand but also promoting growth in agricultural productivity and increased purchasing power of the rural population.

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[66] The negative productivity effect is related to the propensity of the previous government to finance projects of doubtful economic validity, whose proponents frequently had strong political connections.

In view of the expected lags in the response of export production and import substitution to the improvement in real exchange rates, rapid aggregate demand expansion will run into a foreign exchange constraint. Therefore, foreign financial assistance in the form of soft loans or grants, it is hoped, and concessional terms of debt repayment will be necessary, especially in the early phase of recovery.

How should trade liberalization proceed in the current context of underutilized production capacity? One's apprehension is that exposure to foreign competition at this time will inhibit domestic producers from utilizing excess capacity and expanding output. On the other hand, continuing import restrictions and distorted relative prices give the wrong signal for private investment allocation. An appropriate approach to this dilemma would be to reduce tariff and nontariff barriers *gradually* during the economic recovery period. However, the government should make clear early on its intention to eventually move toward low and uniform effective protection rates. This would help prevent misuse of existing capital and inefficient allocation of new investments.

Beyond the need to achieve rapid economic recovery, the new government also faces the challenge of moving the economy to a new development track that promises improved prospects in the longer run. Given the importance of agriculture and the severity of the employment problem in the Philippines, it is hard to envisage a more appropriate development strategy for at least the next five years than one that gives primary emphasis to agricultural growth and employment generation. Two key conditions for such an employment-oriented, agriculture-based development would be: first, the removal of policy-induced price biases against agriculture; and second, continuing improvements in agricultural productivity. Each can be expected to induce higher farm production and rural incomes.[67]

Because food and other labor-intensive consumer goods bulk large in the consumption of rural households, sectors efficiently producing such products (presumably, small-scale producers in regionally dispersed rural areas) will be favored by the rise in rural expenditure. Whether supply will be able to match the increased demand by the rural population for those products will depend on the availability of production inputs and their prices. For instance, if intermediate inputs to agricultural and nonagricultural production are made artificially scarce or expensive by a restrictive foreign trade regime, the full benefits from increased final demand in terms of output growth and labor absorption will not be realized. It is also clear that public provision of infrastructure investments is critical not only to the generation and diffusion of new agricultural technologies, but also to the development and integration of rural markets.

The employment effect of a given increase in rural income will be greater the more skewed is the consumption pattern toward food and other labor-intensive products. Households of the less affluent, small agricultural and nonagricultural producers are most likely to fit this pattern; as in other developing countries, families of the more prosperous owners of large farms and industrial enterprises in the Philippines spend more on capital-intensive goods, whether locally produced or imported. It is important, therefore, that improvements in price incentives, production technologies, and infrastructure facilities should reach the small producers in regionally dispersed rural areas. This is as crucial to the country's long-run economic growth as it is necessary for the participation of the poor in that growth.

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[67] In the Philippine context, it seems reasonable to assume that the income distribution effect of increased agricultural prices will also be favorable (which only a disaggregative, general equilibrium model can verify). For a systematic, empirical analysis of the effects of an exogenous change in food prices on income distribution based on Indian data, see John W. Mellor, "Food Price Policy and Income Distribution in Low-Income Countries," *Economic Development and Cultural Change* 27 (October 1978): 1-26.

APPENDIX: SUPPLEMENTARY TABLES

Table 17—Effective exchange rates by product category, 1950-80

(P/U.S. $)

Year	Essential Consumer Good Imports	Nonessential Consumer Good Imports	Traditional Exports	New Exports
1950	2.00	2.05	2.00	2.24
1951	2.03	3.39	2.00	2.24
1952	2.03	3.39	2.00	2.24
1953	2.03	3.39	2.00	2.32
1954	2.04	3.34	2.00	2.32
1955	2.04	3.68	2.00	2.32
1956	2.11	3.86	2.00	2.32
1957	2.10	4.12	2.00	2.32
1958	2.10	4.17	2.00	2.32
1959	2.16	5.06	2.00	2.30
1960	2.24	6.97	2.22	2.51
1961	3.15	7.02	2.68	2.95
1962	3.74	10.04	3.15	3.37
1963	4.24	11.24	3.52	3.72
1964	4.24	11.10	3.52	3.72
1965	4.29	11.95	3.90	4.13
1966	4.29	11.69	3.90	4.13
1967	4.29	11.77	3.90	4.17
1968	4.29	11.91	3.90	4.17
1969	4.29	11.94	3.90	4.17
1970	6.48	17.67	5.15	6.54
1971	7.04	19.26	5.76	7.26
1972	7.37	20.07	6.27	7.36
1973	7.87	21.92	6.35	7.42
1974	8.02	23.32	6.52	8.53
1975	8.56	24.90	6.96	8.87
1976	8.78	25.56	7.14	7.97
1977	8.74	25.42	7.10	8.33
1978	8.86	25.32	7.08	8.67
1979	8.81	25.35	7.08	8.55
1980	8.97	25.80	7.21	8.70

Sources: Robert E. Baldwin, *Foreign Trade Regimes and Economic Development: The Philippines* (New York: National Bureau of Economic Research, 1975); and Kunio Senga, "A Note on Industrial Policies and Incentive Structures in the Philippines: 1949-80," *Philippine Review of Economics and Business* 20 (September-December 1983): 299-305.

Table 18—Domestic and border price indexes for export and imported products, 1950-80

Year	P_x^*	P_m^*	P_x	P_m
1950	100.5	63.9	39.1	32.0
1951	107.2	72.0	40.3	38.8
1952	84.5	71.0	32.1	48.8
1953	103.1	67.7	39.3	43.4
1954	91.5	64.8	34.5	41.1
1955	83.9	64.8	31.8	39.9
1956	85.1	65.7	33.2	37.9
1957	86.3	67.9	34.7	41.2
1958	89.8	69.3	38.4	43.4
1959	97.3	70.8	43.4	45.2
1960	95.8	72.4	41.9	49.2
1961	88.2	73.4	43.9	52.1
1962	89.1	74.8	53.1	59.9
1963	93.8	79.8	63.6	63.6
1964	93.1	80.4	61.8	64.2
1965	94.7	81.8	63.5	64.5
1966	95.5	83.1	64.1	65.0
1967	97.3	85.0	68.3	65.0
1968	103.3	92·8	76.5	64.8
1969	103.7	94.5	75.1	72.3
1970	105.2	97.9	93.3	87.9
1971	100.0	100.0	100.0	100.0
1972	94.7	104.7	102.4	107.4
1973	138.2	134.9	132.5	127.6
1974	230.0	221.6	222.2	186.6
1975	182.6	229.9	189.1	206.8
1976	159.8	227.4	200.3	230.4
1977	162.2	252.5	251.8	253.9
1978	189.4	257.4	277.9	269.7
1979	223.7	282.8	343.3	328.9
1980	233.0	375.5	351.3	406.5

Source: Central Bank of the Philippines, *Statistical Bulletin*, various issues.

Table 19—Farm-gate prices of major agricultural products, 1950-80

Year	Coconut	Sugar	Pineapple	Tobacco	Abaca	Rice	Corn
				(P/kilogram)			
1950	0.308	0.224	0.150	0.784	0.639	0.294	0.166
1951	0.270	0.218	0.180	0.728	0.611	0.265	0.179
1952	0.191	0.219	0.180	0.734	0.600	0.246	0.168
1953	0.274	0.221	0.149	0.351	0.539	0.216	0.139
1954	0.214	0.253	0.148	0.351	0.366	0.188	0.138
1955	0.211	0.243	0.141	0.375	0.337	0.191	0.137
1956	0.216	0.221	0.139	0.381	0.294	0.186	0.128
1957	0.218	0.221	0.139	0.383	0.295	0.186	0.128
1958	0.279	0.195	0.141	0.400	0.310	0.198	0.125
1959	0.228	0.191	0.145	0.362	0.353	0.191	0.130
1960	0.358	0.188	0.146	0.440	0.622	0.190	0.128
1961	0.285	0.188	0.146	0.439	0.568	0.226	0.155
1962	0.316	0.225	0.139	0.397	0.527	0.231	0.135
1963	0.377	0.233	0.143	0.449	0.480	0.239	0.148
1964	0.420	0.237	0.143	0.564	0.588	0.299	0.203
1965	0.438	0.249	0.144	0.552	0.587	0.308	0.208
1966	0.495	0.314	0.147	0.644	0.483	0.322	0.225
1967	0.530	0.370	0.205	0.818	0.527	0.337	0.220
1968	0.576	0.449	0.288	0.987	0.503	0.407	0.214
1969	0.556	0.554	0.348	1.737	0.625	0.386	0.233
1970	0.660	0.694	0.469	2.050	0.863	0.396	0.262
1971	0.751	0.698	0.518	1.850	0.869	0.469	0.360
1972	0.706	0.732	0.519	2.340	0.932	0.633	1.120
1973	0.844	0.783	0.567	2.460	0.994	0.601	0.451
1974	1.930	0.876	0.844	3.380	2.976	0.887	0.666
1975	1.060	0.909	1.187	4.180	3.847	0.944	0.836
1976	0.566	0.786	1.240	3.760	2.249	0.964	0.881
1977	1.052	1.740	1.322	3.785	2.030	1.022	0.939
1978	1.049	1.110	1.520	3.658	1.850	0.985	0.955
1979	1.984	1.176	1.217	6.736	2.000	1.008	0.922
1980	2.027	1.350	0.564	4.500	2.802	1.069	0.968

Source: Philippines, National Economic and Development Authority, *Philippine Statistical Yearbook* (Manila: NEDA, 1975, 1982, and 1985).

Table 20—Wholesale prices of major agricultural products, 1950-80

Year	Coconut	Sugar	Pineapple	Tobacco	Abaca	Rice	Corn
(P/kilogram)							
1950	0.360	0.233	0.300	1.150	0.879	n.a.	n.a.
1951	0.360	0.224	0.330	0.900	1.035	n.a.	n.a.
1952	0.250	0.235	0.400	0.530	0.640	n.a.	n.a.
1953	0.370	0.251	0.390	0.590	0.637	n.a.	n.a.
1954	0.310	0.246	0.380	0.850	0.454	n.a.	n.a.
1955	0.270	0.228	0.400	0.850	0.498	n.a.	n.a.
1956	0.260	0.231	0.390	0.860	0.600	n.a.	n.a.
1957	0.280	0.244	0.390	0.940	0.746	n.a.	n.a.
1958	0.380	0.252	0.390	0.960	0.651	n.a.	n.a.
1959	0.470	0.246	0.390	0.980	0.963	n.a.	n.a.
1960	0.400	0.275	0.360	0.990	0.994	0.360	0.220
1961	0.380	0.347	0.530	1.090	0.982	0.450	0.250
1962	0.470	0.442	0.600	1.190	0.955	0.410	0.200
1963	0.540	0.592	0.680	1.200	0.982	0.470	0.270
1964	0.560	0.473	0.680	1.260	1.069	0.570	0.280
1965	0.640	0.447	0.700	1.270	0.980	0.550	0.360
1966	0.560	0.534	0.700	1.390	0.855	0.670	0.360
1967	0.630	0.626	0.690	1.570	0.764	0.680	0.330
1968	0.760	0.591	0.660	1.880	0.775	0.640	0.330
1969	0.680	0.614	0.670	1.740	0.955	0.600	0.350
1970	0.980	0.804	1.130	2.050	1.465	0.720	0.380
1971	0.890	0.960	1.200	1.850	1.746	0.910	0.660
1972	0.690	1.121	1.240	2.340	1.718	1.150	0.630
1973	1.870	1.248	1.360	2.460	2.752	1.310	0.670
1974	3.760	2.421	1.740	3.380	5.790	1.970	1.070
1975	1.490	2.443	2.140	4.180	2.930	2.080	1.160
1976	1.650	2.026	2.310	3.760	3.180	1.990	1.190
1977	2.530	1.490	2.520	3.780	3.030	2.050	1.220
1978	3.300	1.490	2.740	3.660	2.680	1.960	1.230
1979	4.020	1.490	2.810	6.740	3.780	2.140	1.260
1980	2.550	1.930	3.290	4.540	5.540	2.290	1.620

Sources: For coconut,sugar, pineapple, tobacco, and abaca, Central Bank of the Philippines, *Statistical Bulletin*, various issues; for rice, Laurian J. Unnevehr and Arsenio M. Balisacan, "Changing Comparative Advantage in Philippine Rice Production," Working Paper 83-03, Philippine Institute for Development Studies, Makati, 1983; for corn, Ponciano S. Intal, Jr., and John H. Power, "The Political Economy of Agricultural Pricing Policies: The Philippines," prepared for the World Bank, University of the Philippines at Los Baños, June 1986 (mimeographed).

Table 21—Border prices of major agricultural products, 1950-80

Year	Coconut	Sugar	Pineapple	Tobacco	Abaca	Rice	Corn
				(U.S. $/kilogram)			
1950	0.195	0.109	0.145	0.745	0.423	n.a.	n.a.
1951	0.198	0.113	0.152	0.706	n.a.	n.a.	n.a.
1952	0.135	0.113	0.146	0.832	n.a.	n.a.	n.a.
1953	0.193	0.122	0.148	0.822	n.a.	n.a.	n.a.
1954	0.170	0.121	0.138	0.733	n.a.	n.a.	n.a.
1955	0.147	0.114	0.164	0.694	0.249	n.a.	n.a.
1956	0.139	0.112	0.234	0.747	n.a.	n.a.	n.a.
1957	0.140	0.117	0.212	0.825	n.a.	n.a.	n.a.
1958	0.171	0.119	0.206	0.765	n.a.	n.a.	n.a.
1959	0.202	0.120	0.181	0.210	n.a.	n.a.	n.a.
1960	0.172	0.123	0.165	0.888	0.413	0.135	0.099
1961	0.140	0.126	0.242	0.767	0.345	0.096	0.105
1962	0.145	0.127	0.287	0.861	0.267	0.128	0.143
1963	0.163	0.143	0.224	0.749	0.280	0.128	0.219
1964	0.171	0.136	0.225	0.866	0.291	0.115	0.181
1965	0.192	0.130	0.197	0.757	0.271	0.113	0.092
1966	0.167	0.136	0.197	0.982	0.237	0.131	0.103
1967	0.167	0.145	0.179	0.958	0.218	0.149	0.055
1968	0.192	0.149	0.169	1.077	0.197	0.162	0.062
1969	0.172	0.152	0.158	1.038	0.233	0.156	0.060
1970	0.180	0.152	0.214	1.087	0.277	0.110	0.137
1971	0.165	0.158	0.196	1.067	0.264	0.084	0.060
1972	0.119	0.172	0.181	1.058	0.266	0.127	0.053
1973	0.225	0.186	0.216	1.058	0.269	0.331	0.089
1974	0.521	0.479	0.244	1.408	0.112	0.493	0.145
1975	0.226	0.596	0.297	1.669	0.066	0.305	0.136
1976	0.182	0.293	0.338	1.434	0.055	0.223	0.125
1977	0.315	0.213	0.362	1.890	0.055	0.278	0.108
1978	0.371	0.175	0.370	1.117	0.053	0.309	0.108
1979	0.616	0.184	0.391	1.760	0.075	0.273	0.112
1980	0.390	0.359	0.438	2.033	0.090	0.342	0.140

Sources: Philippines, National Economic and Development Authority, *Philippine Statistical Yearbook* (Manila: NEDA, 1975, 1982, and 1985); and Central Bank of the Philippines, *Statistical Bulletin*, various issues.

Note: Border prices are calculated as unit values of exports (f.o.b.) and imports (c.i.f.).

Table 22—Domestic price indexes for agricultural and nonagricultural export products, 1950-80

Year	Agricultural Export Price Index (P_{ax})	Nonagricultural Export Price Index (P_{nx})
1950	57.4	67.3
1951	57.2	71.9
1952	44.9	58.0
1953	56.7	68.8
1954	50.8	59.2
1955	46.6	54.8
1956	46.4	60.2
1957	50.4	60.4
1958	58.8	62.7
1959	68.1	68.9
1960	64.2	68.4
1961	68.6	70.0
1962	83.7	83.7
1963	100.4	99.9
1964	94.5	101.0
1965	100.0	100.0
1966	97.9	105.1
1967	107.0	108.2
1968	120.0	121.0
1969	115.0	122.7
1970	160.8	128.3
1971	165.4	146.9
1972	161.6	160.7
1973	285.6	152.3
1974	547.7	178.2
1975	341.3	239.5
1976	322.0	306.9
1977	410.2	378.3
1978	505.1	347.5
1979	607.1	451.9
1980	446.6	547.2

Source: Basic data are from Central Bank of the Philippines, *Statistical Bulletin*, various issues.

Table 23—Power of the import tariffs (T_m) and export taxes (T_x, T_{ax}, T_{nx}), 1950-80

Year	$T_m = 1 + t_m$	$T_x = 1 - t_x$	$T_{ax} = 1 - t_{ax}$	$T_{nx} = 1 - t_{nx}$
1950	2.205	1.010	1.000	1.120
1951	2.280	1.010	1.000	1.120
1952	2.906	1.010	1.000	1.120
1953	2.707	1.015	1.000	1.160
1954	2.678	1.015	1.000	1.160
1955	2.599	1.015	1.000	1.160
1956	2.445	1.015	1.000	1.160
1957	2.570	1.015	1.000	1.160
1958	2.644	1.015	1.000	1.160
1959	2.704	1.015	1.000	1.150
1960	2.852	1.011	1.000	1.131
1961	2.981	1.011	1.000	1.101
1962	1.756	1.006	1.000	1.070
1963	1.726	1.006	1.000	1.057
1964	1.728	1.006	1.000	1.057
1965	1.708	1.005	1.000	1.059
1966	1.697	1.005	1.000	1.059
1967	1.658	1.008	1.000	1.069
1968	1.515	1.008	1.000	1.069
1969	1.658	1.008	1.000	1.069
1970	1.287	0.945	0.874	1.110
1971	1.316	0.927	0.900	1.134
1972	1.301	0.966	0.940	1.103
1973	1.184	0.967	0.939	1.098
1974	1.051	1.010	0.960	1.256
1975	1.050	1.025	0.960	1.223
1976	1.152	0.991	0.960	1.071
1977	1.150	1.019	0.960	1.126
1978	1.204	1.056	0.955	1.176
1979	1.333	1.051	0.958	1.157
1980	1.220	1.060	0.960	1.158

Sources: Basic data are from Central Bank of the Philippines, *Statistical Bulletin*, various issues; Robert E. Baldwin, *Foreign Trade Regimes and Economic Development: The Philippines* (New York: National Bureau of Economic Research, 1975); and Kunio Senga, "A Note on Industrial Policies and Incentive Structures in the Philippines: 1949-80," *Philippine Review of Economics and Business* 20 (September-December 1983): 299-305.

Note: t_m is the implicit tariff rate; t_x, t_{ax}, and t_{nx} are the implicit tax rate for all exports, agricultural exports, and nonagricultural exports, respectively.

Table 24—Wholesale price indexes for the United States and Japan and the yen/dollar exchange rate index, 1950-84

Year	Wholesale Price Index		Exchange Rate Index
	United States	Japan	
1950	71.8	75.0	0.965
1951	79.9	90.8	0.965
1952	77.8	92.7	0.965
1953	76.7	93.3	0.972
1954	76.8	92.7	0.972
1955	77.0	91.0	0.972
1956	79.6	95.0	0.972
1957	81.8	97.8	0.972
1958	83.0	91.4	0.972
1959	83.1	92.3	0.972
1960	83.3	93.3	0.972
1961	83.0	94.3	0.972
1962	83.1	92.8	0.972
1963	82.8	94.3	0.972
1964	83.0	94.7	0.972
1965	84.7	95.3	0.972
1966	87.6	97.7	0.972
1967	87.7	99.3	0.972
1968	89.9	100.3	0.972
1969	93.4	102.3	0.972
1970	96.8	106.1	0.972
1971	100.0	100.0	1.000
1972	104.4	106.1	1.150
1973	118.1	122.9	1.287
1974	140.3	161.5	1.199
1975	153.4	166.4	1.175
1976	160.4	174.7	1.179
1977	170.2	178.0	1.302
1978	183.6	173.5	1.661
1979	206.6	186.1	1.594
1980	235.6	219.3	1.538
1981	257.0	222.3	1.573
1982	262.2	226.3	1.399
1983	265.5	221.2	1.469
1984	271.8	220.8	1.469

Source: International Monetary Fund, *International Financial Statistics* (Washington, D.C.: IMF, various years).

Table 25—Implicit price indexes for GDP, agricultural and nonagricultural value added, 1950-84

Year	P_{gdp}	P_a	P_{na}
1950	46.0	41.7	47.8
1951	50.5	40.2	54.8
1952	47.2	37.9	51.1
1953	44.8	35.7	48.6
1954	43.7	33.7	48.0
1955	43.1	35.2	46.4
1956	44.6	35.5	48.4
1957	46.1	36.6	50.1
1958	46.3	36.3	50.5
1959	45.6	37.1	49.1
1960	48.7	38.7	52.8
1961	50.1	39.5	54.5
1962	51.0	42.6	54.5
1963	55.1	47.5	58.2
1964	59.0	49.7	62.9
1965	60.9	51.8	64.8
1966	64.5	54.9	68.5
1967	67.9	60.3	71.1
1968	71.9	67.8	73.7
1969	76.1	73.0	77.4
1970	88.8	83.7	90.9
1971	100.0	100.0	100.0
1972	106.7	104.6	107.6
1973	125.5	129.5	123.8
1974	164.8	176.0	160.1
1975	178.9	189.4	174.4
1976	195.9	198.5	194.9
1977	213.0	211.1	213.8
1978	230.2	229.0	230.7
1979	266.5	257.0	270.5
1980	306.2	272.2	320.4
1981	338.6	295.0	356.9
1982	367.1	316.2	388.4
1983	410.2	356.0	433.0
1984	613.9	578.5	628.7

Source: Basic data are from Philippines, National Economic and Development Authority, *Philippine Statistical Yearbook*, (Manila: NEDA, various years).

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IFPRI RESEARCH REPORTS

58 *THE FOOD STAMP SCHEME IN SRI LANKA: COSTS, BENEFITS, AND OPTIONS FOR MODIFICATION,* March 1987, by Neville Edirisinghe

57 *CEREAL FEED USE IN THE THIRD WORLD: PAST TRENDS AND PROJECTIONS TO 2000,* December 1986, by J. S. Sarma

56 *THE EFFECTS OF TRADE AND EXCHANGE RATE POLICIES ON AGRICULTURE IN ZAIRE,* November 1986, by Tshikala B. Tshibaka

55 *THE EFFECTS OF TRADE AND EXCHANGE RATE POLICIES ON AGRICULTURE IN NIGERIA,* October 1986, by T. Ademola Oyejide

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53 *REGIONAL COOPERATION TO IMPROVE FOOD SECURITY IN SOUTHERN AND EASTERN AFRICAN COUNTRIES,* July 1986, by Ulrich Koester

52 *FOOD IN THE THIRD WORLD: PAST TRENDS AND PROJECTIONS TO 2000,* June 1986, by Leonardo A. Paulino

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(continued on inside back cover)

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JEI

REPORT

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IMPLICATIONS OF CONTRASTING U.S. AND JAPANESE SAVING BEHAVIOR

Summary

The large gap between the saving rates of Japan and the United States is a key difference between the two countries. The two major reasons for Japan's high saving rate are its high cost of housing and the demographic composition of its population, while the pro-saving nature of its tax system has a marginal influence. Japan's high saving rate contributes to its high level of capital formation and rapid productivity gains. Many economists, meanwhile, point to the U.S. saving rate, which last year fell to its lowest level since 1949, as a source of this country's economic problems and its difficulties in international competition.

The level of saving directly influences international capital flows, exchange rates and trade balances. Japan has become the world's leading creditor nation while the United States is now the globe's largest debtor country. Continued reliance on foreign capital may boost the debt to $650 billion by 1990, imposing a serious burden on the U.S. economy. To reverse this trend toward an ever-increasing foreign debt -- which other countries would at some point cease to finance in any case -- the United States will have to reduce the saving-investment imbalance. Given the difficulty of influencing private saving rates, the most effective way to reduce this country's reliance on foreign capital would be to significantly lower the government budget deficit.

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International Comparisons of Saving Rates

Japan's saving rate is substantially higher than the ratios of other developed countries. Table 1 shows gross saving in Japan averaged 31.4 percent of gross domestic product between 1975 and 1985, compared to the 21.4 percent average of the member countries of the Organization for Economic Cooperation and Development. The U.S. rate, in contrast, is significantly below the average, and the disparity has grown larger as a result of a decline in this country's saving rate in the past 10 years.

Table 1: Gross Saving as a Percentage of GDP, 1975-85

Year	United States	Japan	West Germany	OECD Average
1975	18.1%	32.3%	20.9%	21.5%
1976	18.7	32.6	22.6	22.0
1977	19.7	32.0	21.8	22.3
1978	21.0	32.3	22.6	23.2
1979	21.0	31.5	22.7	23.0
1980	19.2	31.1	21.8	22.0
1981	19.8	31.1	20.2	21.6
1982	16.8	30.5	20.3	19.9
1983	15.8	29.8	21.1	19.4
1984	17.4	30.6	21.5	20.5
1985	16.5	31.4	22.2	20.2
Average	18.5	31.4	21.6	21.4

Source: Organization for Economic Cooperation and Development, Economic Outlook, December 1986, p. 159.

International comparisons should be made with caution, however, since institutional differences between countries can exaggerate the gap in reported saving rates. Household expenditures on consumer durables such as motor vehicles and household appliances, for example, are defined as consumption expenditures under the System of National Accounts used by the OECD. Because these goods provide services over a number of years, some economists argue they should be treated as capital expenditures and hence included in saving. Since Americans spend a relatively large share of their income on consumer durables, this revision would lower the gap between saving rates in Japan and the United States (see Table 2).

The figures could also be adjusted to include private-sector expenditures on research and development under savings. Combining these adjustments lowers the gap between national saving rates, but Japan's still remains substantially higher than other industrial countries. As a nation, the Japanese have demonstrated an unusual willingness to forgo present consumption for larger or more important benefits in the future.

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Table 2: Adjusted Gross Saving Rates, 1970-80

(percentage of gross national disposable income)

	United States	Japan	West Germany
System of National Accounts basis	18.6%	35.0%	25.1%
Including expenditures on consumer durables	24.3	37.0	n.a.
Including private outlays on research and development	19.5	36.1	25.9
Excluding taxes on expenditures	19.6	36.7	27.7
Combined adjustments	26.1	38.9	n.a.

Source: Derek Blades, "Alternative Measures of Saving," Organization for Economic Cooperation and Development Occasional Studies, June 1983, pp. 80-83.

Japan's household sector, which has been a large net lender to the business and government sectors, is the chief source of saving, with a rate that is about three times higher than the United States' (see Table 3). If expenditures on consumer durables are included in savings, the gap between the two countries contracts by only one-third.

Table 3: Household Saving Rates as Percent of Disposable Income, 1975-85

Year	United States	Japan	West Germany
1975	8.8%	22.8%	15.1%
1976	7.1	23.2	13.3
1977	6.1	21.8	12.2
1978	6.2	20.8	12.1
1979	6.0	18.2	12.6
1980	6.2	17.9	12.8
1981	6.9	18.3	13.6
1982	6.4	16.5	13.1
1983	5.2	16.3	11.8
1984	6.3	16.1	11.6
1985	5.2	15.7	11.4
Average	6.4	18.9	12.7

Source: Organization for Economic Cooperation and Development, Economic Surveys of the United States, Japan and West Germany.

Importance of Savings

Policymakers are concerned about saving rates for several reasons. Most importantly, savings provide the resources for capital formation. Increasing the size of the capital stock enhances the productivity of labor and raises the standard of living. Given the low U.S. saving rate, it is not surprising that capital formation as a share of gross national product has been substantially below the average of OECD countries in recent years.

The low rates of saving and investment in the United States have, in turn, contributed to the decline in labor productivity growth, an issue that has become a central theme in the current debate over competitiveness. Productivity growth, which averaged nearly 3 percent a year from 1948 through 1973, fell to only 0.7 percent during the 1973-81 period. Although there was some improvement in the early part of the current expansion, productivity gains are still low by historical standards. While the reasons for this remain unclear, higher saving and a larger capital stock should boost productivity growth.

Savings have played a key role in Japan's rapid economic growth. The large pool of household savings provided low-cost capital to industry and allowed business investment to increase at a 14.4 percent annual real rate over the 1952-73 period, without relying on foreign capital. Investment remains high by international standards; gross fixed capital formation in Japan averaged 30.1 percent of GDP from 1975 to 1985 compared to only 18.4 percent in the United States. This, in turn, contributed to the rapid 6.3 percent average annual growth in productivity in Japan's manufacturing sector during the same period.

Additionally, saving rates influence international capital flows, exchange rates and trade balances. A nation's current account balance (exports of goods and services minus imports of the same plus unilateral transfers) equals the difference between domestic saving and investment. When domestic investment and the government budget deficit do not absorb private saving, as in the case of Japan, the remainder is invested overseas. The outflow of capital is matched by an equivalent current account surplus. A current account deficit occurs when domestic investment and the government deficit exceed private saving. The shortage of domestic saving is offset by an inflow of capital from abroad that matches the current account deficit.

Table 4 shows the relationship between domestic savings and the current account balance. In 1985 gross private saving in the United States was $687.8 billion and gross private investment was $661.1 billion, leaving a private-sector balance of $26.7 billion. Since this was insufficient to fund the government deficit of $136.3 billion, the United States had to import almost $110 billion of capital. Allowing for statistical discrepancy, this matches the $117.7 billion current account deficit.

In Japan, in contrast, the large surplus of private-sector savings was not absorbed by government deficits, leaving $50.3 billion for investment abroad; over half of this outflow was invested in the United States. Japan's large capital outflows have made it the world's largest creditor nation with $129.8 billion in net foreign assets at the end of 1985, while the United States' reliance on foreign capital has made it the world's largest debtor nation, with a net foreign debt that now exceeds $200 billion and might reach

$650 billion by 1990. A foreign debt of that magnitude would require interest payments equivalent to about 2 percent of GNP, nearly matching this country's 2.5 percent real growth rate during the past 10 years.

Table 4: Domestic Saving-Investment Imbalance in 1985

(in billions of dollars)

Japan*	Saving/Investment	United States
$378.6	Total gross private saving	$687.8
284.3	Gross private domestic investment	661.1
94.3	Private sector balance	26.7
-44.0	General government balance	-136.3**
50.3	Overall balance	-109.6
49.2	Current account balance	-117.7

*Converted to dollars at the 1985 average exchange rate of Y238.5=$1.00.
**Includes a federal deficit of $198 billion and a $61.7 billion surplus at the state and local level.

Source: Council of Economic Advisers, Economic Report of the President, 1987, p. 276 and p. 358; Organization for Economic Cooperation and Development, Economic Survey of Japan, 1985, p. 46.

Why Do The Japanese Save So Much?

Nearly every national characteristic has been offered as an explanation for Japan's high saving rate. Some attribute it to the nation's cultural heritage, which encouraged nonmaterial values and slowed the rise in consumer expectations. This is not a satisfactory answer, however, since saving rates in prewar Japan were consistently lower than in the United States. Another explanation is based on the assumption that consumers' perceptions of their permanent income determines their consumption decisions and that they tend to save unexpected income. This theory implies that there is a lag in the adjustment of consumption to higher levels of disposable income. As a result, households would have consistently underestimated their permanent income during the high growth era, causing them to under-consume and save too much. This explanation, however, also seems implausible, given the continued high rate of saving following the deceleration of income growth after 1973. Moreover, this theory treats saving as if it is passively determined. Given the important motives for saving in Japan, it may be that saving takes priority in household decisions and consumption is determined as a residual.

The permanent income hypothesis is also used to explain how the bonus system could raise saving rates. Workers' incomes consist of wages and semiannual bonuses. To the extent that the size of these bonuses is unexpected, the theory holds that households will base consumption expenditures on wage income and save their bonuses. In recent years, however, the bonus has become institutionalized as a standard source of income, accounting for about one-fifth of workers' total earnings. It appears unlikely that households would fail to take the bonus into account in their spending and saving decisions.

Another hypothesis is the alleged lack of an adequate social security system. It is argued that wage earners in countries with extensive public pension programs save less since they can depend on government pensions for their retirement, while in Japan individuals must save to provide for their old age. There are several problems with this argument, however. First, it is not clear whether public pensions do, in fact, reduce private savings. While the availability of social security reduces the need for personal funds to provide for retirement, public pension programs induce workers to retire earlier, thus encouraging private saving.

More importantly, the thesis is inaccurate. Japan's social security system, which was begun in 1961, is now in many ways more generous than the United States'; in fact, the system is so generous that the pension trust fund is likely to be exhausted in 20 years. Under the current program, a Japanese retiree with 32 years of participation in the system would receive a pension equivalent to 68 percent of current wages. If no changes are made, a payroll tax equivalent to almost 30 percent of wages (borne equally by employer and employee) will be necessary to pay for pensions in the year 2025 (see JEI Report No. 12A, March 27, 1987).

One explanation that is certainly significant is that the high cost of housing -- a reflection of the price of land -- requires the Japanese to save a large share of their income. With a total of 120 million people, Japan has a population half the size of the United States' living in an area only 4 percent as large. Moreover, nearly three-fourths of the country is mountainous, reducing the amount of land suitable for housing. And tax and agricultural policies further constrain the availability of land for housing. As a result, land holdings account for half the household wealth in Japan, as compared to only 7 percent in the United States.

The generally substandard quality of housing in Japan relative to other advanced countries does not reflect consumers' tastes. A recent poll showed that 90 percent of the residents of metropolitan areas would like to live in a detached, single-family home. Land prices, though, make the average price of such a home 6.3 times annual income, compared with about 3 times in the United States. In order to make monthly mortgage payments manageable, down payments average 35 percent of the purchase price, forcing prospective homeowners to amass large sums. Not surprisingly, government surveys show that households planning to buy a home have higher than average saving rates. As a result of these factors, the median age for a first home purchase is 40 in Japan compared to 30 in this country.

Demographic differences are another important factor in the high saving rate. According to the life-cycle theory developed by Nobel laureate economist Franco Modigliani, individuals prefer to maintain a stable level of consumption throughout their lives. Since Japanese workers' incomes generally rise steadily until retirement at age 55 or 60 before declining sharply, this implies that people will save during their middle years to repay debt and provide for old age.

During the postwar era, Japan's population has been relatively young in comparison to other advanced countries. In 1980, for example, 9 percent of its population was 65 or over; the average in the other six major industrial countries was 13.1 percent. The life-cycle theory predicts, therefore, that demographic factors should increase Japan's saving rate relative to other countries. This conclusion is supported by Charles Yuji Horioka, who found that the lower ratio of older people to working-age persons in Japan explained over 90 percent of the gap between the Japanese and U.S. saving rates.*

Policies to Correct the Saving-Investment Imbalance

Many observers have proposed changes in Japan's tax system -- which is generally believed to favor saving -- in order to encourage consumption. Currently, for example, interest earned on bank and postal saving deposits is tax-free. As a result, between 58 and 70 percent of personal financial savings are not taxed. But unlike the U.S. system, interest payments on mortgages and consumer debt are not tax-deductible. The effect of the Liberal Democratic Party's plan to eliminate the tax exemption on small saving accounts is uncertain. Since there is considerable evidence that the Japanese are target savers, lowering the rate of return on saving accounts may actually force them to save a higher percentage of their income to achieve their goals.

On the other hand, policies to persuade the Japanese to save less may be short-sighted. Demographic changes that will make Japan's population one of the oldest in the world in the year 2025 are expected to substantially lower household savings. The saving rate has already begun to decline and cannot be blamed for the rise in Japan's current account surplus in the past few years. More attention should be focused on Tokyo's austere fiscal policy, which has lowered the government budget deficit, and on the level of private investment, which remains below the high growth years in terms of its share of GNP. Moreover, it seems unwise to encourage a rich country to consume more and save less when developing countries are short of capital. Japan's surplus savings have an important role to play, particularly since the world's largest economy, the United States, is a major importer of capital. World Bank president Barber Conable has called Japan's trade surplus "a world asset" that should be mobilized for aid.

Since one country's current account deficit is another country's surplus, it is important to consider the effect of developments in other countries on Japan's external balance. From 1981 to 1986, Japan's trade surplus increased $74 billion (see Table 5). The United States alone accounted for more than half of the rise, while the Organization of Petroleum Exporting Countries accounted for about one-fourth, reflecting the drop in the price of oil.

Economic developments in this country, particularly the need for foreign capital, have clearly had a major impact on Japan's economy. The shortage of capital drove U.S. interest rates up, attracting investments from abroad and keeping domestic private investment in Japan lower than it would have been otherwise. The demand for dollar-denominated assets raised the value of the dollar relative to other currencies, resulting in large U.S. trade deficits. The deterioration in the U.S. balance has boosted the trade surpluses of Japan, Canada, the European Community and Latin America.

Resolving the saving-investment imbalance in this country would help lower Japan's external surplus as well as end the U.S. deficit. One way to reduce the U.S. demand for foreign capital would be to raise the level of private saving. This was one of the goals of the 1981 personal tax cuts. Many

*Charles Yuji Horioka, "Why is Japan's Private Savings Role So High?," Finance and Development, December 1986, pp. 22-25.

economists believed that lower tax rates would encourage a rise in savings by increasing investors' after-tax returns. Thus far, however, the tax cuts have failed in this respect (see Table 6). This has been partially offset, though, by an increase in gross business savings. The effect on saving of last year's tax reform, which further reduced personal tax rates, is uncertain. And in light of the scant attention paid to saving in the bill, significant incentives to promote saving, such as the imposition of a consumption tax, appear unlikely.

Table 5: Japan's Trade Balance, 1981 and 1986

(in billions of dollars; exports f.o.b., imports c.i.f.)

	1981 Trade balance	1986 Trade balance	Increase in surplus	Share of increase in Japan's surplus
United States	$13.3	$51.4	$38.1	51.5%
OPEC*	-32.1	-12.4	19.7	26.6
European Community	10.3	16.7	6.3	8.6
Newly industrialized nations**	12.3	17.5	5.2	7.1
China	-0.2	4.2	4.4	5.9
Other developed countries	-1.3	0.8	2.1	2.9
Communist Bloc***	2.0	1.6	-0.4	-0.5
Latin America	3.8	3.3	-0.5	-0.7
Other developing countries	0.5	-0.5	-1.0	-1.3
Total	8.7	82.7	74.0	100.0

*Excludes Venezuela and Ecuador.
**Includes Taiwan, Korea, Hong Kong and Singapore.
***Excludes China.

Source: Ministry of Finance

Given the difficulty of improving the personal saving rate, the key to resolving the U.S. saving-investment imbalance is to cut the federal budget deficit from its current $200 billion-plus range. Since the current account balance is the inverse of the capital account, continued reliance on foreign capital is inconsistent with a substantial improvement in the U.S. trade deficit. Assuming the decline in the dollar during the past two years reduces the trade imbalance as expected, less foreign capital will be available. If government borrowing needs are not reduced, the likely result is a rise in U.S. interest rates that would crowd out the private sector and push the economy into recession. The long-awaited decline in the trade deficit would be accomplished by a drop in U.S. imports, hurting the world economy, particularly the developing countries with debt problems.

Table 6: U.S. Personal Saving Rate, 1970-86

(billions of dollars)

Year	Disposable personal income	Personal saving	Saving rate
1970	$715.6	$57.7	8.1%
1971	776.8	66.3	8.5
1972	839.6	61.4	7.3
1973	949.8	89.0	9.4
1974	1038.4	89.0	9.3
1975	1,142.8	104.6	9.2
1976	1,252.6	95.8	7.6
1977	1,379.3	90.7	6.6
1978	1,551.2	110.2	7.1
1979	1,729.3	118.1	6.8
1980	1,918.0	136.9	7.1
1981	2,127.6	159.4	7.5
1982	2,261.4	153.9	6.8
1983	2,428.1	130.6	5.4
1984	2,670.6	168.7	6.3
1985	2,828.0	143.3	5.1
1986*	2,973.7	116.3	3.9

*Preliminary.

Source: Department of Commerce

For further information, contact Randall Jones.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

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JEI

REPORT

NO. 18A May 8, 1987

JAPAN'S DEFENSE POLICIES IN THE POST-ONE PERCENT ERA

Summary

Japanese defense policies continued to undergo a series of transformations during 1986. While the country will not feel their full impact for many years, these policies were critical in sustaining the momentum toward fulfilling the leadership's goal of establishing a limited self-defense capacity. Foremost among these changes was the decision to eliminate the policy of restricting total defense spending to one percent of the country's gross national product. This, however, does not mean that Japan will enter an era of unrestrained defense spending or even -- much to the chagrin of the United States -- vastly accelerated spending. Instead, progress toward fulfilling the goals of the 1976 defense outline will continued to come in small but steady steps.

No News Is Good News

Defense issues have slipped into the background in the last year, except during those brief periods when the one percent issue was broached. Once the immediate conflict was resolved, however, defense quickly receded into the shadows of overall public policy despite the impact of several issues on domestic and bilateral affairs. For example, joint military exercises between the United States and Japan have continued. Japan's involvement in the occasional Pacific Rim exercises (RIMPAC) has expanded -- no doubt a welcome trend in light of the strains on U.S.-New Zealand ties as a result of the latter's rigid stance on the admission of U.S. nuclear-capable vessels to its ports.

An expanded Japanese defense role and enhanced U.S.-Japan cooperation have manifested themselves in other respects. For example, the level of participation in joint defense operations has been heightened. The air, sea and land forces of both countries took part in a major training drill for the first time in 1986 in the Hokkaido area. The Defense Department's annual burdensharing report -- although critical of Japan's defense efforts -- noted that there had been consistent progress toward meeting the nation's defense goals and cooperating with the United States on common concerns.

Although not widely publicized, one of these was the completion and approval of a joint sealane defense study. While the contents are classified, press reports suggest that it details various contingency plans for defending the sealanes approaching Japan against serious threats, presumably the Soviet Union. The government has also continued a series of tentative yet steady contacts with defense officials from other countries, adding another dimension to overall security policies.

Similarly, the National Defense Council was reorganized last year into a stronger National Security Council. One of the key changes in this government reform was the inclusion of officials in the new council who have responsibility for local police and emergency forces. By including these officials in defense policy and crisis management groups, Tokyo is eliminating one of the most irritating potential problems facing the country: the absence of any legal basis for giving priority to the country's Self-Defense Forces during a short-term or major mobilization.

There also has been increased diplomatic activity. In response to the continued expansion of Soviet influence in Asia and the Pacific, officials have launched a series of initiatives to help maintain stability in the region. One, the "Kuranari plan," expands aid to South Pacific island nations. The decision was announced by Foreign Minister Tadashi Kuranari during his January 1987 tour of the region. This visit came in concert with a tour of Eastern European nations by Prime Minister Yasuhiro Nakasone. While the goals of that tour were mixed, clearly one of them was to demonstrate to the world Japan's growing diplomatic stature, particularly with regard to the Soviet Union.

With the yen's appreciation, Japan's expenditures in dollar terms have skyrocketed, making it the seventh-largest defense power in terms of spending, up a notch from 1985. The Japan Defense Agency is now spending almost $25 billion annually instead of the $18.4 billion figure recorded only a few months earlier. This exchange rate oddity has helped alleviate some of the political pressure on Tokyo. Suddenly, critics are mollified because the dollar figures appear more significant, even though they are unchanged in yen terms and in relation to the country's overall economic strength. The strong yen has also enabled Japan to assume more of the costs of maintaining U.S. forces stationed there.

To fully appreciate the scope of these trends, a brief review of the developments of last year is in order. Primary attention is focused on four areas: the one percent spending issue; participation in the Strategic Defense Initiative; U.S.-Japan technology cooperation; and the FSX debate.

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The One Percent Decision

The most important of these was the cabinet's decision to eliminate the longstanding policy restricting total defense expenditures to one percent of the country's gross national product, a policy implemented in 1976 on a temporary basis by the Miki government to assure defense critics that the adoption of an overall defense outline would not result in rampant militarism. (See the accompanying appendix for the actual force and equipment levels to be achieved in fulfilling the goals of the outline.)

The specific event that precipitated the decision to abandon the spending limit was the adoption in 1985 of a new five-year procurement plan for the Japan Defense Agency. Prime Minister Nakasone sought to scrap the limit outright and institute the five-year estimate as the guiding principle for future defense spending decisions. As these plans became clearer, opposition within the LDP increased, forcing Mr. Nakasone to hedge his strategy and accept an upgrading of the status of the five-year estimate while still retaining an informal one percent guideline to influence budgetary decisions. This reassured critics of defense spending that future budgets would not go unrestrained but still begged the question of appropriate guidelines for future defense spending policies.

This decision simply postponed the inevitable for another year. The estimate called for total spending in the neighborhood of just over one percent of GNP, depending on economic growth rates. At the time, GNP growth showed signs of weakening. Indeed, the 1985 total would have exceeded the one percent cap had it not been for the periodic readjustment of the base used by government economists to calculate GNP. Mr. Nakasone -- facing a slight but sudden dip in his popularity ratings as the issue heated up -- accepted the short-term strategy of a higher status for the five-year program with the knowledge that it would force the one percent issue at a later date.

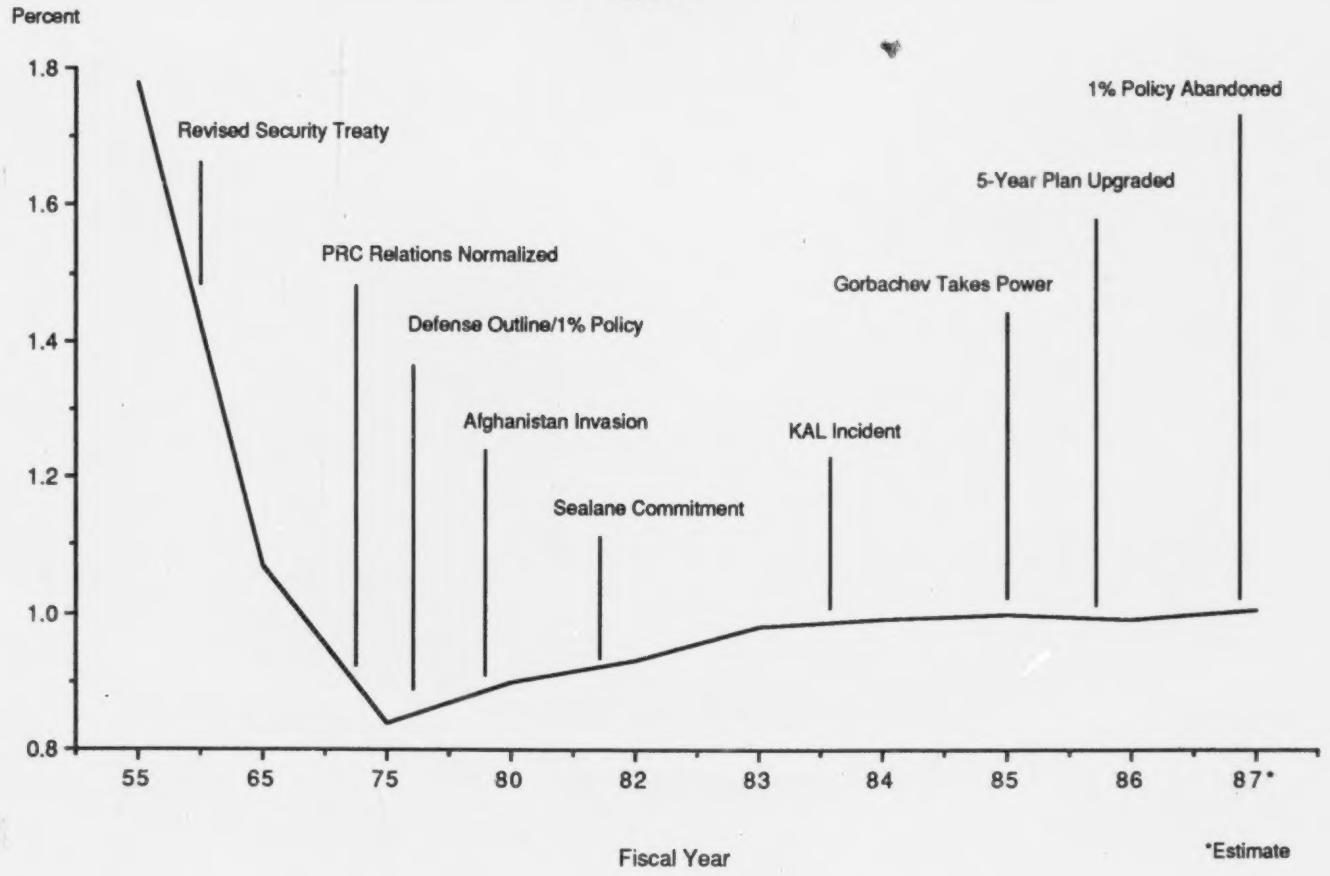
The inherent conflicts of the new arrangement quickly became evident when the government approved the fiscal 1986 defense budget. Although the JDA requested more funds, the cabinet approved a 6.58 percent hike to launch the first year of the new estimate; again alloting larger increases to defense and to the second element in its comprehensive security scheme -- official development assistance -- than to other agencies. Spending rose from Y3.14 trillion ($22.4 billion at Y140=$1.00) to Y3.34 trillion ($23.9 billion) for the April 1, 1986-March 31, 1987 period, a real increase of 5.4 percent. This maintained total defense spending at just under one percent of the country's gross national product, contingent on the government's optimistic economic forecasts.

While the total was not what the agency had sought, it got the first year of the expansion off on the right foot. It is still debatable whether the program will reach its goals, however. According to Japanese analysts, annual average budget increases of 7.9 percent will be needed. Although comparisons with the previous five-year estimate may not be appropriate, it is nevertheless significant to note that the agency achieved only 40 percent of its earlier goals.

When the press reported that JDA had asked for a 7.5 percent increase for fiscal 1987, it was clear that the spending issue would once again become the center of attention. Weakening economic conditions, continued pressure

Defense Spending and Gross National Product

FY 1955-87



from Washington to spend more on defense and congressional threats to link trade and defense issues made it unlikely that Tokyo would be able to avoid the issue any longer.

One factor changed the outlook considerably: the Liberal Democratic Party's massive victory in upper and lower house Diet elections last July. The convincing win -- interpreted as an endorsement of Mr. Nakasone's policies -- strengthened his hand on the defense issue even though it was clear that voter sensitivity to increased defense spending was still present. The 300-plus majority in the lower house, however, enhanced the ruling party's ability to push the FY 1987 defense budget through the Diet. Anti-defense forces immediately warned the LDP against arrogance in its dealings with the opposition, but in some respects the only relevant questions involved the impact of the government's fiscal austerity drive and the weak economic outlook. With the July 1986 elections, the opposition party factor became a minor concern.

Finance ministry officials made it clear that they intended to reduce government outlays by leaking to the press a 4 percent proposed spending hike for FY 1987, well below JDA's 7 percent proposal. MOF hoped to limit increases based on reduced expenses -- fuel costs, for example -- resulting from lower domestic prices and the strengthened yen. JDA, however, used the same argument in calling for bigger outlays, noting that reduced costs could enable the Self-Defense Forces to expand inflight training times, which have fallen gradually over the last decade in part because of higher fuel prices and tight budgets.

The issue moved slowly toward resolution with the announcement by the cabinet in December 1986 of the initial FY 1987 budget increasing defense expenditures to Y3.5 trillion ($25.1 billion) -- a 5.2 percent increase over FY 1986's initial budget -- and bringing the total to slightly over one percent. The National Defense Council, a group of key government officials chaired by the prime minister, approved the decision as consistent with the spirit of the one percent policy. The cabinet formally scrapped the one percent limit on January 24, 1987 when it announced that the procurement goals of the 1976 outline would dictate spending levels rather than any arbitrary figure; a major victory for the prime minister and other supporters of his defense policies.

Public reaction toward these developments was mixed. The opposition predictably denounced the changes, but failed to press the issue in the Diet because of the furor over the government's proposed sales tax. In fact, the dispute over this proposal -- a value-added tax that would have offset anticipated income-tax cuts -- virtually smothered the one percent issue. Indeed, some observers suggest that the government intentionally pressed the one percent issue at that time in hopes that the decision would be overlooked in the confusion.

International reaction to the move was mixed. A well-circulated article by former secretary of state Henry Kissinger criticized increased Japanese defense spending, suggesting that it was an inherently destabilizing influence in Asia and the Pacific and calling for increased aid spending instead. JDA officials and leaders of the "boeizoku" -- the unofficial defense policy group in the Diet -- discounted the Kissinger statement as either an overreaction or a total misunderstanding of Japan's policies and intentions.

Significantly, Japan's comprehensive security concept -- in which the government attempts to contribute to global stability through both defense and aid -- appears to have gained greater credibility in Washington as a result of the new decision. In the past, Tokyo's offers of increased aid were often received in Washington as an effort to avoid its defense commitments. Even though the thrust and pace of Japanese defense spending policies is not likely to change over the coming decade, simply eliminating what was perceived in Washington as an artificially contrived excuse to avoid defense responsibilities has made Japan's aid program appear a more responsible and legitimate component of a larger global strategy.

One question remains unanswered; the likelihood of revising the procurement goals annexed to the 1976 outline. Although Mr. Nakasone made it clear that the five-year plan would not be affected by the recent decision, there has been debate on the overall force and equipment levels that were stipulated ten years ago. Procurement thus far has been aimed primarily at making qualitative changes in the force levels outlined in 1976; discussion might now focus on the need to make quantitative changes, given the current international climate and the Soviet's increased military power in Asia and the Pacific.

For the time being the budget enables the Nakasone government and its successors to shift more of the defense burden to the air and naval components of the Self-Defense Forces and to continue to enhance SDF sustainability. In the FY 1987 budget, for example, 36 percent will be allocated to purchases of military equipment, a significant hike. Almost 44 percent will be earmarked for personnel costs. The ground forces will receive 36.6 percent of the total, the air SDF 25.5 percent and the navy 24.5 percent. These figures suggest a gradual shift to naval strength to support the government's policy of "meeting a threat at sea."

Severe political, budgetary and economic pressures will continue to moderate defense spending in the long term but eliminating the 1 percent policy has great symbolic importance. Nevertheless, observers suggest that the spirit of the old policy dictates that total defense spending remain within 1.2-1.5 percent of GNP, hardly rampant militarism but still a sizable increase given present funding levels.

SDI: Another Big Step

Although the details regarding Japan's participation in the Strategic Defense Initiative have not been ironed out (although press reports suggest that they are imminent), Tokyo did take the step in late 1986 of announcing its willingness to allow companies and government research groups to participate in SDI-related research. That move ended months of discussions between the two countries on the principle of participation. Although Japan was criticized for dragging its feet on SDI, the prolonged delays helped diffuse the considerable public and political opposition to the program.

Three Japanese business-government delegations toured the United States before the government task force on SDI participation submitted its favorable recommendation. The third delegation charged with reviewing policy options, which visited U.S. government offices and private sector interests involved in SDI research, was the only one of the three to include private sector representatives. This report went to top cabinet officials in January 1986, bringing a final decision one step closer. In some respects, this delegation was considered the most important since it included technical specialists capable of evaluating the program's potential impact on Japan's scientific and technological base. The delegates were convinced that SDI participation would strengthen the nation's economic structure and would not drain valuable resources, an important factor in making a final determination.

Almost a full year had passed since the Department of Defense first invited U.S. allies to join the controversial research and development program. Of the countries that indicated support or interest, Japan's investigation has been the most methodical. Tokyo weighed a variety of political considerations, including the impact on its relations with other nations in the region; the policy ramifications given domestic restrictions on defense policies; and the lack of uniform support for the program in policymaking circles.

The government formally announced its decision in September 1986 following the return of JDA director general Yuko Kurihara from policy discussions in Washington. There followed new rounds of talks aimed at resolving the private sector's concerns about the repatriation of technology generated under SDI contracts by Japanese firms. Of equal concern were U.S. fears over maintaining the secrecy of potentially classified information.

At the same time there were indications that Congress was taking a second look at foreign participation in the SDI program. One example was Senate approval of an amendment sponsored by John Glenn (D, Ohio) that restricted foreign inputs that could be "reasonably performed" by American firms. Although the amendment also provided for waivers under certain circumstances, Sen. Glenn's intention was clear. "Let us spend American dollars for the benefit of Americans, here at home," he told his colleagues in the Senate, "where we need to develop our own scientific infrastructure so that we can compete." He also questioned the wisdom of what he viewed as an administration attempt to buy international support for SDI with the promise of lucrative research contracts, insisting that SDI should be approached in the same spirit of burden-sharing that guides U.S. defense policies in other areas. The current approach, he said, was "like the kid with a sack of candy who buys friends temporarily." (The provision ultimately was deleted in a House-Senate conference, although a similar amendment that embodied many of the same ideas was added in a sense of Congress resolution.)

Japan also has concerns. Business leaders fear that companies might be unable to benefit commercially from their involvement in the program if DOD places severe restrictions on the repatriation of SDI-generated technology. The country's anti-nuclear policies have come under severe stress as a result of the SDI discussions -- one reason for the government's methodical approach to the issue. Neighboring countries -- especially the Soviet Union -- have been highly critical of the project, although they appear to have accepted unofficially the reality that Japan will have at least a minor role in the program.

Signs of Stress: Technology Transfers

Sen. Glenn's position reflects very widespread fears of relying on foreign sources for the technology needed to preserve the U.S. industrial base and its ability to defend the country and its allies. The most critical example concerns semiconductor technology, mirroring tensions in the private sector. Perhaps the most discouraging development in terms of enhancing U.S.-Japan technological cooperation in defense was a report by a task force of the Defense Science Board on U.S. military dependence on foreign sources for semiconductors.

Calling integrated circuits the "industrial rice" of modern industry, the task force urged the establishment of a government-funded effort in cooperation with the private sector to preserve the U.S. manufacturing base in the face of growing competition from Japan. The study said that in every area of semiconductor production except one -- linear (analog) nonsilicon products -- the United States trailed or was losing its technological edge to Japan. In response, it called for a comprehensive strategy to reverse this trend, and some members went so far as to urge a strict "buy America" or quota policy to ensure against U.S. dependence on foreign sources for integrated circuits.

The proposed government support -- which calls for about $200 million annually -- would set up a Semiconductor Manufacturing Technology Institute. The institute would develop, demonstrate and advance the technology for efficient, high-yield manufacturing of advanced semiconductor devices. The center is not envisioned as a production facility although it would have limited capacity to produce selected Defense Department items. Rather, it is anticipated that the facility -- in cooperation with business, government and academia -- will provide an influx of expertise to the sagging semiconductor industrial base. In addition, the authors called for expanded research and development funding in semiconductors, higher discretionary funds for DOD to "underpin healthy industrial research and development," and the establishment of eight centers at selected universities to improve semiconductor design and manufacturing techniques in the private sector.

It is significant that after years of emphasizing technology transfers from Japan, the report focused on Japan as the primary threat to the U.S. industry's viability and failed to consider technology transfers that might help revitalize U.S. semiconductor makers. The determinedly go-it-alone tone of the report implied that, at best, Japan's presence in the United States defense establishment -- in the form of semiconductor sales -- was a major concern to DSB members; at worst, it suggested that Japanese firms were not welcome in the United States.

Although observers familiar with the report and with the DSB emphasized that it was primarily the work of an outside group of advisors -- most of whom represented competing commercial interests -- many Japanese observers could not help but be confused about American intentions. This reaction was particularly strong since only months before the same Defense Science Board -- albeit with different task force members -- had been exploring means of facilitating bilateral cooperation and technology exchanges.

A more chilling episode for Japanese interests, however, was the attempted buyout of the Fairchild Semiconductor Corp. by Fujitsu, Ltd., a major semiconductor producer seeking a U.S. production base for advanced chips. The DSB report was released only a few weeks before Fujitsu received what it evidently interpreted as signals by DOD that its presence was clearly unwanted in the United States. While there have been other instances of alleged DOD interference in Japanese companies' attempts to acquire certain high-tech companies based in the United States, the Fairchild case may have been the most emotional and potentially the most damaging to the overall goal of U.S.-Japan cooperation in defense areas.

Fairchild's situation was simple. It was a producer of specialized chips for the DOD and therefore was deemed by many government officials as essential to national security. One problem was that its foreign owner -- Schlumberger Ltd. -- would no longer continue to pump funds into the failing firm, which also reportedly suffered from declining technology. Failing to find a suitable American firm to take up its banner, Fairchild was courted by Fujitsu in October 1986. The plan called for Fujitsu to acquire an 80 percent stake in Fairchild.

The proposed merger quickly raised national security concerns because of Farichild's DOD-related production. As the issue dragged on, Commerce Secretary Malcolm Baldrige announced his opposition to the proposal, a reflection of the semiconductor industry's concerns about letting the Japanese firm establish a foothold in the U.S. market and gain access to Fairchild's research and development. DOD Secretary Caspar Weinberger reportedly opposed the sale as well on national security grounds.

The combination of bad press, the release earlier in the year of DOD's annual defense report to the Congress stressing the need to preserve the U.S. industrial base, and the DSB semiconductor report led Fujitsu to drop the proposal on March 16, 1987, although the two firms will continue to cooperate through a series of joint ventures. National security advocates in the United States cheered the results. Supporters of the deal lamented a lost opportunity to secure technology transfers through a merger. (Some informed sources suggest that negative comments from DOD were leaked by opponents of the takeover who decided to amplify their views through selective press leaks.) Most distressing of all to advocates of the sale was that DOD never seriously exercised its potentially positive leverage by testing Fujitsu's willingness to provide other inputs in exchange for unimpeded acquisition of Fairchild.

In any event, the case could well go into the gunny sack of high-tech troubles that reportedly includes similar disappointing experiences by Kyocera Corp. and other Japanese firms anxious to acquire U.S. companies deemed essential to national security. The extent of this restriction means that the budding efforts to further bilateral technological cooperation could be set back if not totally poisoned.

The Trade-Defense Linkage: FSX

Perhaps no issue has been as contentious as JDA's review of alternatives to replace the outdated F-1 aircraft with a new generation of fighter support planes -- dubbed the FSX project. Reports in the Japanese and American media regarding FSX developments often have been contradictory and heated, but that only attests to the emotions surrounding the issue in the two countries and the fact that it is in a state of flux.

JDA has been reviewing its final options for months. There are essentially three possibilities: outright purchase of a foreign-made aircraft; licensed production or coproduction of a foreign aircraft or a derivative thereof; or domestic production of a Japanese-designed plane. Of the aircraft mentioned, the McDonnell Douglas F-18, General Dynamics F-16 and the Panavia Tornado -- a European product -- are said to be in the running for the prize, with the F-18 favored and the Tornado a distant third. Industry sources say that domestic production is based on the F-18 design to a significant degree. Japanese prime contractors overwhelmingly favor domestic production, as do significant elements within the government bureaucracy, although there are officials who favor a U.S. system for political and economic reasons.

Press reports over the last two years have suggested that JDA was on the verge of accepting virtually every possibility, but it is clear that domestic industry lobbying has been so strong -- and increasingly overt -- that the leadership is under great pressure to produce a plane with the greatest domestic content possible. Some overseas observers have suggested that the fact that the decision has been reported on any number of occasions over the last two years to be imminent indicates the effectiveness of domestic proponents in fending off foreign contenders. The longer the issue takes to resolve, they reason, the more appealing the domestic option becomes since each year reduces the effective lifespan of the F-18 and other foreign contenders. Furthermore, proponents of a domestic option can cite increased trade frictions as evidence of the United States' unreliability and as justification for going it alone.

According to a June 6, 1986 report in the Asahi Shimbun, one of Japan's largest and most respected dailies, JDA ruled out a support fighter designed and produced entirely by Japanese industry as costly and beyond the technological capabilities of domestic producers. However, citing JDA sources, the Asahi report suggested that a delegation sent to the United States earlier that year had doubts about the safety and performance of the front-running F-18 and was dissatisfied with the "Super Hornet" option -- an enhanced F-18 designed to meet JDA specifications. This led to proposals for joint development, with Japanese contractors in the lead and American firms participating in various phases of the design and production of engines and avionics for the new fighter.

Missouri Republican John Danforth threw a monkey wrench into the dispute in March 1987 when he warned that U.S.-Japan relations would be strained further if JDA chose the domestic production option. The blast came as JDA received what media reports characterized as final briefings by the three aircraft manufacturers. Sen. Danforth called on administration officials to urge Japan to purchase a U.S. system to help offset its huge trade surplus with this country, and said that it was both less costly and less risky. The Society of Japanese Aerospace Companies responded to the senator bluntly, expressing full confidence in the domestic industry's ability to "develop and design the FSX by ourselves" and at a lower cost.

The spat has not threatened to overflow into the trade area any further -- for now -- but the Danforth move clearly added a new dimension to the dispute. Although individuals involved have spoken of the trade implications, they preferred to look at it solely in terms of defense-related issues. In the meantime, the infusion of the trade rhetoric helps cloud other -- perhaps more important -- issues, including two-way technology transfers that might be realized through the FSX program.

There is another aspect of the FSX case that reflects somewhat contradictory attitudes in Japan toward defense. The non-aggressiveness of the Japanese public cannot be questioned, but there is an unmistakable element of pride in reporting the nation's progress toward domestic production of a first-rate fighter aircraft for the Self-Defense Forces. Even the Asahi -- normally a harsh critic of government defense policies -- colors its reports on the FSX with consistently patriotic overtones.

For many nations the production of an advanced aircraft is equated with national prestige and status in the international community. That criticism can be made even of Sweden -- hardly a serious threat to global peace and more commonly associated with loftier causes such as the Nobel Peace Prize. But in Japan's case the issue is more sensitive given its history and the peculiar circumstances facing defense planners. Such sentiments are significant and will continue to be a factor in the security relationship for decades to come.

Critics of Japan's defense industry question whether Tokyo abandoned its one percent spending ceiling in order to satisfy the domestic defense industry or larger defense procurement needs. Proponents of an American alternative to the FSX insist that it is by far a less costly option than domestic production. Citing the F-15 experience (which many in Japanese industry dispute), U.S. contractors and government officials see precious financial resources being sucked up by a bottomless FSX pit if domestic production is chosen, when tight budgets could be used far more efficiently by acquiring a U.S. fighter. This is another argument familiar to other countries, but it is especially emotional in light of Japan's limited defense spending in relation to its overall economic strength.

Conclusion

Once JDA decides on the FSX, most of the visible issues between the United States and Japan will have been resolved -- for better or worse -- for the next two years. Japan will be in the initial stages of producing a foreign derivative of a fighter support aircraft or a home-grown product. Technology transfer arrangements are on the books and are being implemented -- satisfactorily or unsatisfactorily. Decisions regarding production and deployment of Aegis destroyers to support Japanese naval forces in enforcing a 1,000-mile sealane defense will have been implemented. The five-year procurement plan will still have two more years to go, and the review of that plan -- unlike previous years -- may not take place until its final year, although the practice has been to conduct a review in the third year.

In many respects it will be possible to characterize Japan's defense policies and U.S.-Japan defense relations as business as usual in the coming months. Issues similar in many respects to the FSX case -- for example, the introduction of a new AWACS system -- could easily emerge, again testing the bilateral defense relationship. The outlook for such issues is likely to be murky, in part because they certainly will evolve after the present administration has left town. A Democratic leadership or a different Republican administration could very well view these issues in a new light.

What will become more troublesome to both Japan and the United States will be cases such as Fujitsu-Fairchild. Several forces will combine to complicate efforts to manage the political and economic relationship while furthering defense ties. On one hand, Washington encourages foreign inputs, while on the other it discourages such a presence; the determined -- many in the United States would say relentless -- drive of Japanese companies to secure overseas markets and assure access to the most advanced technologies available is matched by the preference in both countries for domestic procurement.

Resolving these challenges will be difficult since they ultimately bring into question whether the United States and Japan are allies or competitors. The answer, of course, is that they are both, and defense issues increasingly will provoke confrontations between the two aspects. Thus far both countries have managed to minimize the conflicts, but it would seriously complicate the bilateral and domestic Japanese defense outlook if they become unmanageable.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

Table 1: Japan's Initial Defense Budget, FY 1955-FY 1987

(in billions of yen)

Fiscal Year	Budget	Percent Change	Budget/GNP Ratio
1955	Y134.9	-3.3%	1.78
1965	301.4	9.6	1.07
1975	1,327.3	21.4	0.84
1980	2,230.2	6.5	0.90
1981	2,400.0	7.6	0.91
1982	2,586.1	7.8	0.93
1983	2,754.2	6.5	0.98
1984	2,934.7	6.6	0.99
1985	3,137.2	6.9	0.99
1986	3,343.6	6.6	0.99
1987	3,517.4	5.2	1.00

Source: Japan Defense Agency, Defense of Japan, 1985; Japan Times, December 31, 1986.

Table 2: Allocation of Japan's Defense Expenditures (Initial Budget), FY 1981-FY 1986

Category	FY 1982	FY 1983	FY 1984	FY 1985	FY 1986
Personnel	46.6%	44.5%	44.6%	45.1%	45.1
Supplies	53.4	55.5	55.4	54.9	54.9
Equipment acquisition	22.4	24.9	26.3	26.2	26.9
Research and development	1.1	1.1	1.2	1.6	1.7
Facility improvement	2.3	1.9	1.3	1.4	1.7
Maintenance	15.8	16.3	15.5	15.1	14.4
Base countermeasures	10.4	10.0	9.7	9.5	9.0
Other	1.4	1.3	1.3	1.2	1.2
Expenditures (billion yen)	Y2,586.1	Y2,754.2	Y2,934.7	Y3,137.2	Y3,343.6

Source: Japan Defense Agency, Defense of Japan, 1986

Chronology of Events Affecting U.S.-Japan Security Affairs
September 1985 - March 1987

1985

9/4	Japan agrees to the first transfer of military technology to the U.S.
9/18	Cabinet approves FY 1986-90 procurement plan, upgrading its status from planning document to the level of an official government program but retaining the limit on total defense expenditures to one percent of GNP.
10/2	U.S.-Japan working-level talks on technology transfers in Washington.
10/4	Economic Planning Agency announces that defense expenditures for FY 1985, ending March 31, 1986, will remain within one percent of Japan's gross national product.
10/7	West German defense minister Manfred Woerner meets Japan Defense Agency director general Koichi Kato in Tokyo.
10/10	Foreign Minister Shintaro Abe meets top officials in China.
11/5	U.S. and European representatives stress military sales to help rectify trade imbalances with Japan.
11/19	Reagan-Gorbachev summit begins.
11/22	Japan, Soviet Union and the U.S. sign aviation safety pact to prevent recurrence of the 1983 KAL 007 incident, in which a civilian airliner was shot down by Soviet interceptors.
12/27	Detailed arrangements for bilateral technology transfers are concluded.

1986

1/6	Abe visits Washington to discuss SDI, FY 86 defense budget.
1/13	Eighth regular Japan-U.S. Systems and Technology Forum meets in Washington.
1/15	Soviet Foreign Minister Eduard Shevardnadze visits Tokyo, the first such trip in a decade. U.S.-Japan security subcommittee meets in Hawaii. Second Japanese SDI delegation departs for the United States.
2/5	U.S. Defense Department submits its annual report to Congress, underscoring Japan's role in Asia's security.
2/6	Soviet plane violates Japanese air space.
2/24	First U.S.-Japan integrated command post exercise takes place.
3/31	Third Japanese SDI delegation arrives in the United States.
4/1	Secretary of Defense Caspar Weinberger leaves for five-nation Asian tour.
4/12	Nakasone begins two days of meetings with top U.S. officials.
4/23	Japanese SDI delegation briefs government officials in Tokyo.
5/4	Tokyo summit.
5/13	Kato declares that SDI participation is consistent with Japan's defense posture.
5/19	Maritime Self-Defense Forces take part in RIMPAC exercises.
5/26	Diet enacts legislation reorganizing the National Defense Council.
5/29	Abe goes to Moscow, reciprocating the January Shevardnadze visit.
6/2	Diet lower house is dissolved. Upper and lower house elections are set for July 6.
6/9	Foreign Ministry reports that Japan's official development assistance fell 12.1 percent to $3.8 billion in 1985 -- the final year of a five-year ODA program -- due chiefly to a sharp drop in multilateral ODA.

7/6	LDP achieves landslide victory in Diet elections.
7/27	New cabinet is formed.
8/8	JDA releases annual defense white paper.
8/24	Protestors meet the USS New Jersey -- armed with nuclear capable Tomahawk missiles -- on its arrival in Sasebo.
8/25	Joint U.S.-Japan air drill commences off coast of Miyazaki prefecture.
9/1	Government adopts preliminary budget guidelines, with the largest increases going to JDA and ODA programs.
9/2	Japanese government officially approves participation in SDI.
9/4	Moscow blasts the Japanese move to join in SDI research saying that it would not produce "any positive results for Japan's security."
9/8	Nakasone relieves Education Minister Fujio of his position after he refused to resign voluntarily after making controversial remarks regarding Japan's pre-war occupation of Korea.
9/11	LDP formally extends Nakasone's term as party president one more year.
9/16	Nakasone says Japan's decision to participate in SDI research does not violate Diet resolution banning space development for military purposes.
10/6	Nakasone repeats the government's intention to pass an anti-espionage law due to his perception that Japan is a "spies' paradise." (Subsequent efforts to reach an acceptable draft within the LDP fail).
10/9	Foreign Minister Tadashi Kuranari says that the Japanese government has informed the U.S. that it wants Soviet nuclear force reductions in Asia to parallel those in Western Europe.
10/11	Reagan and Gorbachev begin a two-day session on arms reductions in Reykjavik, Iceland.
10/16	Japan elected a nonpermanent member of the U.N. Security Council for a two-year term.
10/19	Vietnam's Minister of Foreign Affairs Vo Dong Giang meets Kuranari in Tokyo. Japan and the Soviet Union exchange messages marking the 30th anniversary of the restoration of diplomatic relations.
10/27	The first Japan-U.S. joint military exercise involving the army, navy and air forces of both countries begins in Hokkaido area.
11/11	Philippine President Corazon Aquino calls for increased aid during her four-day visit to Japan.
12/5	Kuranari confirms that Gorbachev will not visit Japan in January but hopes to visit as soon as possible.
12/16	The Washington Post reports that Nakasone offered his assistance to President Reagan in securing release of American hostages in the Middle East. Nakasone subsequently denied knowledge of U.S. arms deals with Iran.
12/22	Japanese government sets FY 1987 economic growth estimate at 3.5 percent. JDA director general Yuko Kurihara warns against potential linkage of trade and defense issues in U.S. relations. U.S.S.R. criticizes planned defense spending increases by Japan.
12/23	Quoting government sources, Japanese news reports indicate that the government will negotiate higher payments for maintenance of U.S. bases in Japan.
12/24	U.S. government representatives sign a joint study on sealane defense. Japanese officials had initialed the agreement on December 19.
12/29	Senior cabinet officials increase proposed FY 1987 budget for defense, bringing total defense spending above 1 percent of GNP. The cabinet delays consideration of new spending limits until early 1987.

1987

1/6	Kuranari begins 11-day tour of five South Pacific nations.
1/7	Chinese Vice Premier Tian Jiyun begins 10-day visit to Tokyo.
1/8	U.S.-Japan security subcommittee meets in Hawaii. Japan-Australia ministerial committee meeting commences.
1/11	Nakasone begins a six-day tour of Eastern Europe; LDP Secretary General Takeshita begins a five-day visit to China.
1/13	Chinese leader Deng Xiaoping expresses worry over proposed increases in Japan's defense budget.
1/14	Kuranari announces "Pacific Doctrine" in Fiji.
1/21	U.S., Japanese officials discuss disarmament and arms control concerns.
1/24	Cabinet officially removes one percent of GNP defense spending ceiling.
2/1	Foreign Ministry sources are quoted in Japanese press reports as saying that Japan will participate in SDI under formulas similar to those concluded by West Germany and other participants.
2/5	Sen. Lloyd Bentsen (D, Tex.) introduces Omnibus Trade Act, which accuses Japan of practicing "adversarial trade."
2/9	Plans are announced for the deployment of a second F-16 squadron at Misawa later this year.
2/12	The Defense Science Board releases a study on U.S. defense dependence on foreign semiconductor production.
2/16	A delegation of Democratic Socialist Party Diet members leaves for Washington to exchange views on defense, exchange rates.
2/17	Kuranari declares that U.S. space station must be utilized for non-military purposes only if Japan participates.
2/19	South Korean army chief of staff Pak Hui Tong meets with JDA officials in Tokyo.
2/23	Major newspaper polls indicate falling support for Nakasone cabinet among voters. Junya Yano, chairman of Komeito, arrives in Washington for meetings with top officials.
2/27	Foreign Ministry officials express concerns over the Reagan administration's "broad interpretation" of 1972 antiballistic missile treaty.
3/5	According to Japanese press reports, JDA officials state that the U.S. hopes for joint development of the next generation support fighter aircraft (FSX). Sen. John Danforth (R, Mo.) warns that Japanese domestic development of the FSX would further impair relations with the U.S.
3/6	Secretary of State George Shultz arrives in Tokyo for talks with Nakasone and Kuranari.
3/12	Commerce Secretary Malcolm Balridge states opposition to Fujitsu's attempt to acquire Fairchild Semiconductor Corp.
3/16	Fujitsu drops plans to acquire Fairchild.
3/20	JDA announces that its Technical Research and Development Institute will be reorganized in July to speed the development of next-generation military technologies.
3/31	Press reports quote Kurihara as saying that Japan wants to build its next generation of fighter planes in cooperation with the U.S.

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REPORT

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THE HOUSE TRADE BILL: STRATEGY AND SUBSTANCE

Summary

The House of Representatives passed a sweeping trade bill April 30 that is designed to aid in the restoration of U.S. competitiveness as well as fight back against unfair trading practices abroad. Supporters of the bill believe that it is a much-needed first step if this country is to reclaim its place in the world trading system. Opponents insist that it is protectionist and certain to spark retaliation. This report will examine the contents of HR 3, the politics surrounding it and the prospects for a new trade law in 1987.

Introduction: From Back Burner to Priority

When the 100th Congress convened January 6 there was no shortage of trade proposals ready to be introduced. While trade had certainly been an issue during the second session of the 99th Congress, House-passed legislation had ultimately taken a back seat in the Senate. Last-minute action on tax reform, aid to the Nicaraguan contras and budget reconciliation took precedence, leaving trade legislation to die in the Senate Finance Committee. Still, even though the House debates indicated that trade was a mounting concern for both parties, it was the solid 55-45 Senate majority won by the Democrats during the 1986 midterm elections that pushed the issue to the top of the priority list. This was clear almost immediately after the elections when the new majority leader, Sen. Robert Byrd (D, W.Va.), announced that the shift in Senate control should be interpreted as a referendum on presidential policies -- especially trade.

The Democratic leadership on the other side of the Hill agreed and announced its intention to complete action on trade legislation by late spring. Despite protests that representatives should dissociate themselves from the controversial bill passed by the House during the previous Congress, which was widely considered protectionist, the majority leaders decided to use that legislation as a starting point. HR 4800 was reintroduced on the first day of the session and was renamed HR 3. The low number attached to the bill was no accident; it was intended to be a clear message to the White House that time constraints would not impede passage of a trade bill during 1987. In fact, the first three bills introduced during the 100th Congress revived Capitol Hill-administration battles from last year: the clean water bill, highway reauthorization and trade.

At least part of the reason for the emphasis on trade was Congress' failure to take significant action on the budget deficit. For Democrats, painfully aware that the public would hold them responsible for congressional actions in both chambers -- and already looking ahead to the 1988 presidential campaigns -- major tax increases and other ways to hike revenue were politically impossible. Thus, despite a near-consensus among economists that correcting the budget deficit is the best way to address the U.S. trade problem, lawmakers chose to reverse the priorities. Finance Committee chairman Lloyd Bentsen (D, Tex.) argued that since the trade deficit adds to the budget deficit by preventing economic growth, trade legislation would help alleviate the fiscal imbalance. Most legislators, however, admitted that although foreign unfair practices account for much less of the trade imbalance than does the budget deficit, trade legislation would be a positive "first step" toward restoring U.S. competitiveness.

Rhetoric remained at a high pitch, as legislators repeated familiar demands for "fair trade" and a "level playing field." New words were added to the trade jargon as well. The search for "competitiveness" became the trend-setting slogan, while lawmakers lambasted the growing "mercantilism" of U.S. trading partners. By contrast, support for free trade all but disappeared.

Recognizing the inevitability of a trade bill this time around, the administration indicated its intention to participate in the process -- a sharp turnabout from its insistence in 1986 that trade legislation was unnecessary and potentially harmful. The White House was also prompted by a second motive. Its legal right to submit trade agreements concerning nontariff barriers for fast-track (limited debate and no amendments) consideration to Congress is scheduled to expire in January 1988, while its right to proclaim reductions in tariffs has already run out. Faced with the demands of the Uruguay Round of multilateral trade negotiations and the proposed U.S.-Canada free trade agreement -- including the need to preserve the administration's negotiating credibility with its trading partners -- the White House recognized the need for a trade bill in 1987. But while acknowledging the inevitability of making certain concessions to Congress, officials hoped that their participation would help produce a more moderate bill than HR 4800.

On February 19 Senate Minority Leader Robert Dole (R, Kan.) introduced the administration's bill as S 539 and House Minority Leader Robert Michel (R,

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Ill.) introduced HR 1155 -- identical bills that pinpointed five broad areas as key to increased U.S. competitiveness: increased investment in human and intellectual capital; the promotion of science and technology; increased protection for intellectual property rights; legal and regulatory reforms; and "improving the international economic environment" through trade law reform. On the whole, the bill took a much milder approach to trade revision than HR 3, although it did indicate some early compromises from the executive branch.

Moreover, the White House continued to assert its credibility by stressing past activism in trade matters. Officials repeatedly pointed to the Reagan administration's unprecedented practice of self-initiating investigations of foreign unfair trade practices under Section 301 of the 1974 Trade Act, as well as the broad range of trade negotiations it counted as successes. Well aware of the mounting belief in Congress that the executive branch accomplishes far too little in its trade negotiations and the considerable skepticism about the beneficial effects of the dollar's depreciation, the administration has maintained a high trade profile thus far during the 100th Congress. Nonetheless, complaints about the results of some trade negotiations, especially the U.S.-Japan semiconductor accord, continued to mount. Pressure from Congress concerning semiconductors only added to the administration's frustration about Japan's compliance with the pact. On March 27 President Reagan announced that Washington would retaliate against Japan by imposing 100 percent tariffs on $300 million worth of Japanese products.

A Divergence of Strategies

HR 3 was referred to six committees: Ways and Means; Energy and Commerce; Foreign Affairs; Banking, Finance and Urban Affairs; Education and Labor; and Agriculture. Within these committees, there were varying reactions to the desirability of cooperating with the White House. The most glaring difference was between Ways and Means, which welcomed administration participation, and Energy and Commerce, which was determined to approve very tough legislation. Although Ways and Means never considered the administration's bill a viable alternative to HR 3, it did use it in developing a compromise.

Intense behind-the-scenes negotiations -- including close consultations with the administration -- led to the introduction of a compromise proposal when the Ways and Means markup began in early March. Committee chairman Dan Rostenkowski (D, Ill.) and trade subcommittee chairman Sam Gibbons (D, Fla.) introduced an alternative to the provisions in HR 3 under their committee's jurisdiction in an attempt to tone down some of the more controversial elements of the bill.

While many of the provisions that the administration objected to were altered or deleted, the most widely discussed was the revision of last year's "Gephardt amendment," which required any country with a pattern of unfair trade practices and "unwarranted" trade surpluses with the United States to reduce its surplus by 10 percent annually until the imbalance is no longer considered unwarranted. In Ways and Means' new version, negotiations were mandated to eliminate the unfair practices that led to the surplus. In the absence of an agreement, the administration was required to retaliate unless retaliation would damage this country. No quantitative targets for surplus reductions were required. This question of mandatory quantitative reductions was the key difference between Ways and Means and Richard Gephardt (D, Mo.) (see next section).

Having adopted some of the administration's proposals, the co-chairmen's initiative also retained several provisions that the White House had attempted to bury. Nonetheless, the Ways and Means substitute was greeted optimistically (if not with open arms) by the executive branch. It also received bipartisan support from the committee members, sailing through the final vote with only two dissenters in contrast to the party-line approval that similar sections of HR 4800 received from the committee last year. As the clearest attempt to formulate a compromise with the White House, the Ways and Means approach represented the intention of moderate Democrats (and most Republicans) to pass a bill that the president would be willing to sign.

But there was another -- and growing -- point of view among legislators, as illustrated by the markup process in the Energy and Commerce Committee. Representatives in this group were dubious about the administration's cooperation, which they said was a case of too little, too late. They went on to craft a new title for HR 3, pushing hard for a punitive strategy vis-a-vis U.S. trading partners.

Not surprisingly, most of the jabs were aimed at Japan. The committee approved provisions that would direct the U.S. Trade Representative to initiate a Section 301 investigation of restrictions on U.S. architectural, engineering, construction and consulting services in Japan (a result of the industry's frustrations with the bidding process for Kansai International Airport). Another addition was a nonbinding provision calling for the White House to evaluate the impact of foreign countries' defense spending on U.S. competitiveness, "including Japan's expenditures of 1 percent of its GNP on defense as compared to U.S. expenditures of 6 percent of its GNP." In response to Fujitsu, Ltd.'s attempted takeover of Fairchild Semiconductor Corp., the committee also reported language granting the president the right to block foreign ownership of an industry or part of an industry if it threatened national security.

The single most controversial action taken by Energy and Commerce, however, was the adoption of an amendment by John Bryant (D, Tex.) that would require foreign investors to make available for public use information on U.S. investments that have a market value of more than $10 million, equity interests in U.S. properties (of specified assets or sales) if they amount to 5 percent of the total ownership; non-transitory/non-speculative portfolio interests that have a market value of more than $50 million; and "controlling" equity interests that exceed 25 percent of total ownership in business enterprises (of specified assets or sales).

Proponents of this provision argued that known foreign investment in the United States (in terms of international capital flows) has more than doubled in the last five years. Further, they stressed that although foreign investment benefits the economy, more data should be available to policymakers -- especially given the debtor status of this country. Opponents stressed that the entire provision is based on a faulty premise: that foreign investment is somehow dangerous to the United States. Moreover, they say, it is unjustifiably discriminatory to require foreign disclosure while imposing no such requirement on U.S. investors. Last -- and most important -- opponents believe the retroactive element of the proposal would cause investors (especially those from countries having political difficulties with the United States) to liquidate current investments, and might induce them to turn elsewhere for future investments.

Although Energy and Commerce became the symbol of the hard-line approach on trade, other committees also adopted proposals that were punitive -- especially vis-a-vis Japan. One was the proposal by Charles Schumer (D, N.Y.), which was adopted by the Banking, Finance and Urban Affairs Committee, prohibiting the Federal Reserve Board or the Federal Reserve Bank of New York from granting primary dealer status to foreign firms if U.S. companies do not have equal access to purchases of government debt instruments in the dealers' home countries. The provision would also withdraw privileges from foreign firms that are already primary dealers.

The House Foreign Affairs Committee concentrated on export promotion measures, including provisions to establish a United States and Foreign Commercial Service Pacific Rim Initiative; to reduce the number of export items that are controlled for national security purposes; and to modify standards of culpability under the Foreign Corrupt Practices Act. The Agriculture Committee focused on improving the promotion of agricultual exports abroad, while the Education and Labor Committee zeroed in on improving educational and training programs.

Four other committees managed to attach their measures to the bill as well. First, Government Operations approved a "buy America" provision to bar firms in countries that discriminate against U.S. goods and services in making government purchases from competing for federal contracts. Second, the Merchant Marine and Fisheries Committee passed a proposal that would require negotiations with parties that "unreasonbly impair" the transportation of goods by U.S. vessels; retaliation would be optional. Third, the Public Works and Transportation Committee adopted a provision to tighten the time limits for investigations involving air transportation under the 1974 International Air Transportation Fair Competitive Practices Act. Fourth, the Small Business Committee added a title that would improve export promotion and technology transfer programs for small businesses.

To make matters more complex, jurisdictional disputes compounded the conflict between the moderate and hard-line philosophies. The sharp differences between Ways and Means and Energy and Commerce reflected the longstanding rivalry between trade subcommittee chairman Gibbons of the former and committee chairman John Dingell (D, Mich.) of the latter. Tensions were obvious in the markup process and in subsequent staff negotiations to reconcile conflicts. Nor was Ways and Means the only committee to feel threatened by the Energy and Commerce initiative. The chairwoman of the Banking, Finance and Urban Affairs subcommittee on economic stabilization, Mary Rose Oakar (D, Ohio), testified before the Rules Committee that several provisions that Energy and Commerce approved concerned international finance as well as defense production and offsets -- areas under the jurisdiction of her committee.

The Gephardt Amendment

As the debate continued, all eyes turned toward Rep. Gephardt. The Missouri Democrat unveiled a modified version of his 1986 proposal to cut the trade surpluses of certain countries, but recognized early on that he did not have enough support to win the approval of the Ways and Means Committee (of which he is a member).

Although critics complained that the pending amendment obscured many other provisions worth discussing, the attention was in large part justified.

Even before HR 3 reached floor debate, its passage was all but guaranteed. The question was how restrictive the final bill would be. Thus, since the Rules Committee placed the vote on the Gephardt amendment before any Republican-sponsored measures to alter or delete other controversial sections, the amendment became the litmus test of whether the House would swing toward the moderate or extreme position on trade.

Mr. Gephardt's "results-oriented" proposal would require the International Trade Commission to identify countries with "unwarranted" trade surpluses -- which are defined as those whose ratio of exports to imports is at least 175 percent, with more than $7 billion in total trade with the United States, a bilateral surplus of more than $3 billion (excluding petroleum), and a global trade surplus. Countries that fit these criteria include Japan, South Korea, West Germany and Taiwan. The USTR would then identify those that maintain a pattern of unfair trade practices and the administration would have six months to negotiate agreements to eliminate the practices in question. If no agreement is reached, the White House would have to take immediate action in the first year to achieve a reduction equal to the amount of the surplus that is deemed "unwarranted." In subsequent years an annual 10 percent reduction would be required until the country eliminates its unfair practices or the surplus is no longer judged unwarranted. (If an agreement is reached, but an annual reevaluation indicates that the country has not eliminated its unfair practices, the mandatory reductions would go into effect.)

According to Gephardt supporters, their proposal is preferable to the one approved by Ways and Means since it sets a standard by which to measure the actions of trade partners. Since the Rostenkowski-Gibbons proposal does not set up a monitoring system with specified targets, they say, foreign countries only have to agree to alter unfair practices in order to escape sanctions. Moreover, it is added, no immediate proof is required to demonstrate compliance in the committee version. It is important to note that both the Gephardt and Ways and Means proposals contain a broad loophole that would allow to president to refuse to take action in order to protect the national economy.

Critics denounced the rigidity of the mandatory quantitative reductions, warning that this would reduce the amount of world commerce and ultimately result in a trade war. Others, including USTR Clayton Yeutter, pointed out that bilateral trade policy negotiations may not be the optimal way to address a macroeconomic problem such as the deficit. They also argued that the Gephardt amendment was likely to inspire "mirror" legislation. Such retaliation would make it difficult for the United States to recover from its debtor status since in order to do so it will have to run a substantial current account surplus.

A less-discussed element of the Gephardt proposal concerns currency manipulation. Under this part of the amendment, if the Treasury Secretary determines that a country with an "excessive and unwarranted" bilateral trade surplus is also maintaining its currency at an artificially low level, the administration must enter negotiations to achieve a realignment of the foreign currency. If negotiations fail, the imposition of an "exchange rate equalization tariff" is optional. This is virtually identical to a provision approved by the Ways and Means Committee.

The House Trade Bill

With arguments for and against the amendment raging and a torrent of lobbyists making last-minute appeals to legislators, the fate of the Gephardt provision was uncertain literally until the last minute. Observers were giving the provision a slightly better-than-even chance of House passage. After a heated debate led by Mr. Rostenkowski (opposing) and Mr. Gephardt (supporting), the amendment passed by a mere four votes, 218-214, on April 29 (see Table).

As expected, the success of that proposal set the tone for the rest of the debate: four Republican attempts to modify other controversial elements in HR 3 failed. In short, the final bill contained the more extreme version of every proposal offered on the floor. (See Appendix for a list of floor amendments.) The vote on the bill itself was a foregone conclusion; it passed resoundingly on April 30 by a vote of 290-137. This 2-1 victory margin showed the House's support for the broader aspects of the bill, if not all its specifics. Nevertheless, many legislators expect the Gephardt provision to be an early concession during a House-Senate conference committee, even though Mr. Rostenkowski has promised to fight to retain it.

Despite a substantial amount of Republican rhetoric decrying the trade and competitiveness problem, the vote on HR 3 followed party lines more closely than last year's vote on HR 4800. Only 43 Republicans voted for this year's proposal compared to 50 last year. Geographic factors obviously played a part in these Republican defections (see Figure). Of the 43, a full 15 came from the hard-hit industrial states of Pennsylvania and Michigan.

Votes on the Gephardt Amendment; HR 3; HR 4800

Gephardt Amendment

	YES	NO
Dem.	201 46.5%	55 12.7%
Rep.	17 3.9%	159 36.8%

HR 3

	YES	NO
Dem.	247 57.8%	6 1.4%
Rep.	43 10.1%	131 30.7%

HR 4800

	YES	NO
Dem.	236 57.6%	4 1.0%
Rep.	59 14.4%	111 27.1%

Votes On HR 3 By State

State	Partisan Breakdown of State's Representatives	"Yes" Votes	"No" Votes	Not Voting
Alabama	5 Dem; 2 Rep	5	2	0
Alaska	0 Dem; 1 Rep	0	1	0
Arizona	1 Dem; 4 Rep	1	4	0
Arkansas	3 Dem; 1 Rep	3	1	0
California	26 Dem; 18 Rep; 1 Vacant	23	19	3
Colorado	3 Dem; 3 Rep	3	2	1
Connecticut	3 Dem; 3 Rep	5	0	1
Delaware	1 Dem; 0 Rep	1	0	0
Florida	12 Dem; 7 Rep	12	7	0
Georgia	8 Dem; 2 Rep	8	2	0
Hawaii	1 Dem; 1 Rep	1	1	0
Idaho	1 Dem; 1 Rep	1	1	0
Illinois	13 Dem; 9 Rep	13	8	1
Indiana	6 Dem; 4 Rep	6	4	0
Iowa	2 Dem; 4 Rep	2	4	0
Kansas	2 Dem; 3 Rep	2	3	0
Kentucky	4 Dem; 3 Rep	5	2	0
Louisiana	5 Dem; 3 Rep	5	2	1
Maine	1 Dem; 1 Rep	2	0	0
Maryland	6 Dem; 2 Rep	7	1	0
Massachusetts	10 Dem; 1 Rep	11	0	0
Michigan	11 Dem; 7 Rep	17	1	0
Minnesota	5 Dem; 3 Rep	5	3	0
Mississippi	4 Dem; 1 Rep	4	1	0
Missouri	5 Dem; 4 Rep	6	3	0
Montana	1 Dem; 1 Rep	1	1	0
Nebraska	0 Dem; 3 Rep	1	2	0
Nevada	1 Dem; 1 Rep	1	1	0
N. Hampshire	0 Dem; 2 Rep	0	2	0
N. Jersey	8 Dem; 6 Rep	11	3	0
N. Mexico	1 Dem; 2 Rep	1	2	0
N. York	20 Dem; 14 Rep	23	11	0
N. Carolina	8 Dem; 3 Rep	11	0	0
N. Dakota	1 Dem; 0 Rep	1	0	0
Ohio	11 Dem; 10 Rep	14	7	0
Oklahoma	4 Dem; 2 Rep	4	2	0
Oregon	3 Dem; 2 Rep	2	3	0
Pennsylvania	12 Dem; 11 Rep	21	2	0
Rhode Island	1 Dem; 1 Rep	2	0	0
S. Carolina	4 Dem; 2 Rep	5	1	0
S. Dakota	1 Dem; 0 Rep	1	0	0
Tennessee	6 Dem; 3 Rep	7	2	0
Texas	17 Dem; 10 Rep	16	10	1
Utah	1 Dem; 2 Rep	1	2	0
Vermont	0 Dem; 1 Rep	1	0	0
Virginia	5 Dem; 5 Rep	5	5	0
Washington	5 Dem; 3 Rep	4	4	0
W. Virginia	4 Dem; 0 Rep	4	0	0
Wisconsin	5 Dem; 4 Rep	5	4	0
Wyoming	0 Dem; 1 Rep	0	1	0
Total:		290	137	7

Still, GOP leaders indicated that their primary objections to the bill were in only four areas: the Gephardt amendment (which they labeled a "recessionary time bomb"); the banking title (including provisions concerning exchange rate target zones, reciprocity in financial markets and measures to address the third world debt crisis); "buy America" provisions for government procurement; and the Bryant amendment on disclosures of foreign investments. A summary of other major elements of the bill follows:

Unfair Trade Practices (Section 301 of the 1974 Trade Act) - The U.S. Trade Representative rather than the president would determine whether a foreign practice is unfair and would have the right to recommend action, although the president would still decide what action, if any, to take. The bill mandates retaliation for certain unfair practices but leaves a fairly broad loophole if the president chooses not to act. Moreover, the bill specifies new actions to be classifed as unfair, including export targeting, denial of internationally accepted labor rights, toleration of cartels and lack of reciprocal market access.

Relief for Industries Injured by Imports (Section 201 of the 1974 Trade Act) - The USTR rather than the president would determine what relief -- if any -- would be given to a domestic industry. If the International Trade Commission makes a positive injury determination, trade adjustment assistance benefits would automatically be accorded to affected workers and firms. Provisional import relief (while the injury determination is being made) would be provided for industries facing critical circumstances.

Antidumping and Countervailing-Duty Laws - Duties could be imposed against "diversionary dumping," that is, goods exported to the United States that contain a major component that is subject to antidumping penalties. Procedures to monitor goods that contain previously dumped or subsidized items -- "downstream product monitoring" -- are also included. The bill would facilitate the ability of U.S. firms to initiate private suits to claim damages for past dumping violations. It also provides for some of the antidumping penalty funds to be used to compensate firms that have been injured by dumping.

Intellectual Property (Section 337 of the 1930 Tariff Act) - The USTR rather than the president would be authorized to review these cases after the ITC issues recommendations. The USTR would also establish priority countries for negotiations to protect intellectual property. Most importantly, the bill removes the requirement that a firm must demonstrate that it has been injured before it qualifies for relief.

Export Promotion - The bill would increase the funding and number of programs devoted to promoting U.S. exports. With regard to export controls, the Commerce Department must strive to achieve a 40 percent reduction in the number of controlled items. At the same time, the bill eliminates several export licensing requirements and expedites the export license application process. An appropriation of $5 million would also be used to improve the export promotion efforts of small businesses.

Maritime Provisions - The legislation requires the Federal Maritime Commission to determine practices that "unreasonably impair" the transportation of goods by U.S. ships. The Transportation Department would initiate negotiations to eliminate these unfair practices. Retaliation would be optional.

Miscellaneous Provisions - With regard to telecommunications trade, the USTR would enter into negotiations to eliminate foreign barriers; if no agreement is reached, retaliation would be mandatory (but the president would have a broad set of retaliatory options). The administration's authority to proclaim reductions in tariffs and to submit nontariff trade agreements for "fast-track" consideration would be renewed, although the bill provides for increased consultations with Congress on trade negotiations. With regard to mergers and acquisitions by foreign companies, the president would be authorized to restrict any such ventures if they would threaten the national security. Time limits for action on unfair practices in the area of air transportation would be tightened. The drive to improve U.S. competitiveness led to the inclusion of sections providing for expanded trade adjustment assistance and educational programs as well as the establishment of a Council on Industrial Competitiveness. Provisions are included to expand U.S. agricultural exports abroad (for example, the expansion of the Export Enhancement Program).

The Final Product: Veto Bait or Consensus?

That some sort of trade legislation will pass both chambers in 1987 is common wisdom in Washington these days. The question is how tough the final House-Senate compromise will be -- and whether the bill will earn a presidential veto. While it is still too soon to tell, there is a good chance that a "signable" bill will emerge from the process.

For one thing, there is little political mileage to be gained by the Democrats in adopting a confrontational approach. Trade has been a notoriously poor issue on which to base a national campaign. Many observers have concluded that Walter Mondale's failure to win the 1984 presidential race was at least partly because he was viewed by the American people as too protectionist. And although presidential aspirant Richard Gephardt's campaign has thus far centered around the trade dispute, his office insists that the Gephardt amendment was not motivated by political purposes. Since the issues involved in the 1988 presidential campaign will certainly expand to include other topics, it appears probable that Mr. Gephardt's stance on trade will serve him best in terms of name recognition.

Moreover, the majority leadership on both sides of Capitol Hill has all but staked its reputation on a promise that the public will get a trade bill before the end of the year. This means that work on the measure should be concluded before the 1988 races really heat up. While one House staff member surmised that there are certainly some legislators who would like to see trade become a political asset for their party, most recognize that it is a dangerous strategy to force the president to veto the bill by including a host of extreme provisions. Given the intensity of the congressional controversy over certain elements of the bill, it is doubtful that either chamber would be able to override a veto of legislation similar to HR 3.

In fact, many representatives who voted for the Gephardt amendment have already indicated that they do not approve of its extreme approach, but wanted to show their backing for the candidacy of Mr. Gephardt. Others who voted against the amendment but for the bill expressed a hope that certain elements of HR 3 would disappear during a conference committee. Because HR 3 is far from its final stages, legislators are more willing at this point to support controversial provisions in order to gain bargaining leverage for the upcoming conference committee, to send a warning to the administration or trading partners, or to score political points back home.

Finally, a compromise is still feasible because the Senate will probably produce a more moderate bill. Although the Senate proposal, S 490, was in many respects harsher than HR 3, Finance Committee chairman Bentsen proposed several compromise amendments during the committee's early May markup. While several provisions are objectionable to the administration -- especially those mandating retaliation for certain unfair trade practices (Section 301) and relief under Section 201 -- the chairman has tried to achieve a bipartisan consensus on the bill. And to a large degree, he has succeeded. The committee approved the proposal by a vote of 19-1, although ranking minority member Robert Packwood (R, Ore.) warned that his "yes" vote in committee will not extend to the floor consideration unless the legislation is modified. Moreover, to date there does not appear to be a Senate committee that will embrace the hard-line position that Energy and Commerce adopted in the House.

Given the major differences between the House and Senate Finance proposals, it is the conference committee that will ultimately decide how tough the final bill will be. Several moderate legislators hope to iron out the differences between the bills and eliminate the extreme provisions. The converse of this scenario is, of course, that the influence of the hardliners may continue to grow -- and that each chamber may accept the toughest elements of the other's proposal. The most likely event is that the resulting legislation will fall somewhere in between: minus the most extreme proposals, but including some provisions that remain objectionable to the White House.

But there is a long way to go before the proposed legislation will be acceptable to the executive branch. Certainly the adminstration has threatened to veto any proposal containing the Gephardt amendment. But according to a May 9 report by the Washington Post, the president has hinted that both HR 3 and the Finance Committee version of S 490 (which does not include the controversial proposal) are prime targets for vetos. The Post quoted White House spokesman Marlin Fitzwater as saying that the president "would like to get trade legislation from Congress that he can sign. But what we have seen to date is not at all encouraging."

Moreover, the administration has been somewhat reticent as to how far it is willing to compromise with Congress. With respect to HR 3, officials sent a letter to House members three days before the final floor vote objecting (among other things) to provisions on mandatory retaliation; restrictions on foreign investment (the Bryant amendment and the provision allowing the president to block foreign acquisitions); legislated exchange rate objectives; amendments to the antidumping and countervailing-duty laws; the inclusion of violations of worker rights as an actionable unfair trade practice; and the maritime title.

Although the White House has not said whether it will accept a middle ground between this position and the current version of the trade bill, it is still early in the game. White House spokesmen actively participated in the Senate Finance Committee markups and are likely to volunteer their opinions in other committees. The executive branch has, after all, publicly recognized the value of trade legislation by offering its own bill. It would be especially painful if U.S. negotiators had to continue the Uruguay Round without a renewal of their negotiating authority and with the prospect of a veto override vote pending in the background. As for Congress, Democratic legislators are committed to the bill's passage, as are many Republicans. Even the staunchest free traders are loathe to appear soft on trade to their constituents. In the final analysis, then, it may well be in the best interests of all involved to develop a workable compromise.

For further information, contact Eileen Marie Doherty.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

Appendix: Floor Amendments Offered To HR 3

Marcy Kaptur (D, Ohio) Passed: 398-19	Adds to U.S. trade negotiating objectives an international agreement limiting most favored nation status to countries extending reciprocal market access.
Claude Pepper (D, Fla.) Passed: 394-27	Directs the USTR to report to Congress concerning methods to improve enforcement of restrictions on imports from Cuba.
Richard Gephardt (D, Mo.) Passed: 218-214	Requires certain actions to be taken with regard to countries with excessive and unwarranted trade surpluses.
Chalmers Wylie (R, Ohio) Defeated: 187-239	Complete substitute for Banking title.
Jim Olin (D, Va.) Passed (voice vote)	Deletes section dealing with milk price supports (excess casein imports).

Sam Gibbons (D, Fla.) Passed (voice vote)	Deletes section 671 on meat food product labeling.
Norman Lent (R, N.Y.) Defeated: 190-230	Allows certain exemptions to the investment disclosure requirements of the Bryant amendment.
Steny Hoyer (D, Md.) Passed (voice vote)	Establishes a sense of the Congress that the president should express oral opposition to the slave labor policies of the Soviet Union.
Donald Lukens (R, Ohio) Passed (voice vote)	Changes effective date of section placing lace gloves made with plastic or rubber under the same tariff as textile gloves.
Ernest Konnyu (R, Calif.) Defeated (by division)	Deletes "buy America" act for government procurement.
Frank Wolf (R, Va.) Passed: 232-183	Suspends most favored nation treatment for the products of Romania.
Don Pease (D, Ohio) Passed (voice)	Requires the president to include a trade impact statement in his proposed budget and the report accompanying the budget resolution (see JEI Report No. 15B, April 17, 1987).
Robert Michel (R, Ill.) Defeated: 156-258	Complete substitute for HR 3.

5/26/87 R5650-2

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REPORT

NO. 19B
May 15, 1987

IN THIS ISSUE:

Japanese Purchases Of U.S. Securities Remain Strong 1

Finance Committee Completes Action On Trade Bill 4

Quotas On Textiles, Apparel, Footwear: Winners And Losers 5

Extra Diet Session Seen Likely 7

Japan-EC Relations Reflect U.S. Tensions 8

Agricultural Issues: The Next Big Bilateral Showdown? 11

Notes: Second KDD 12

Japanese Purchases Of U.S. Securities Remain Strong

Despite the recent volatility of exchange rates, Japanese investors were large purchasers of U.S. Treasury bonds in the May 5-7 $29.05 billion refunding operation. The Japanese reportedly bought nearly half of the $9.27 billion in 30-year bonds offered and about one-fourth of the total amount auctioned. Nevertheless, yields were about 1.25 percentage points higher than in the February auction, reaching 8.76 percent on 30-year bonds.

Since many Japanese buyers have lost money on U.S. bond investments as a result of the plunge in the dollar's value, some financial analysts expected them to reduce their purchases last week out of concern that the dollar would continue to fall. The Yomiuri Shimbun estimates that Japn's seven major life insurance companies had foreign exchange losses of $10.2 billion in FY 1986 (April 1, 1986-March 31, 1987), although these losses have been partly offset by capital gains resulting from the strong bond market. The dollar's current weakness, though, may mean that its long slide is finally over. Some economists believe the dollar is already undervalued, given its weak purchasing power relative to other currencies. According to Samuel D. Kahan of Chicago's Kleinwort Banson Government Securities, the dollar is undervalued by 35 percent against the yen based on consumer prices in the two countries.

Japanese purchases were also boosted by the rise in the gap between long-term interest rates in the two countries. The differential, which had fallen to under 3 percentage points at the beginning of the year, is now about 5 percentage points. U.S. interest rates have risen in response to worries about higher inflation and the Federal Reserve Board's tighter monetary policy (see JEI Report No. 18B, May 8, 1987). At the same time, the Bank of Japan, which lowered its official discount rate to a record-low 2.5 percent in February, has taken steps to reduce Japanese interest rates. While the central bank is denying rumors of a further cut in the discount rate, it is lowering short-term interest rates by pumping money into the financial system. Last week it purchased Y700 billion ($5 billion at Y140=$1.00) worth of commercial bills and certificates of deposit.

Japanese capital has played a key role in the world economy during the past few years, as net purchases of foreign bonds surged from only $6.1 billion in 1982 to $93 billion last year (see Table 1). The increase reflects a variety of factors including the country's high saving rate. With household savings too large to be fully utilized by domestic industry and the government intent on shrinking its budget deficits, the surplus has been invested abroad (see JEI Report No. 17A, May 1, 1987).

Financial liberalization has also prompted increased capital flows. Prior to April 1986, for example, trust banks and life insurance companies, which are major purchasers of foreign securities (see Table 2), were only allowed to invest a maximum of 10 percent of their total funds in foreign assets. That ceiling is now 30 percent. Financial liberalization has also encouraged the globalization of financial markets. As of July 1986, for example, Japanese securities firms operated 150 offices in foreign countries, while banks had 74 foreign subsidiaries and 196 branch offices overseas helping to invest Japanese funds abroad.

A significant share of Japan's foreign investment has been in the U.S. bond market. According to the central bank, net purchases of U.S. securities (including government and corporate bonds) totaled $31.6 billion in 1985. While official data are not yet available, The Economist estimates that the amount doubled in 1986, attracted by high interest rates, political stability and market depth. The global U.S. dollar bond market, for example, is more than four times as large as the market for bonds denominated in Deutsche marks.

Japan's long-term capital flows are likely to remain significant even as its trade surplus begins to decline. Given its status as the world's largest creditor nation, Japan's investment income from abroad will rise substantially, boosting its current account surplus.

Table 1: Japan's Long-Term Capital Flows, 1982-86

(in billions of dollars)

	1982	1983	1984	1985	1986
Gross outflows	$27.4	$32.5	$56.8	$81.8	$132.1
Direct investments	4.5	3.6	6.0	6.5	14.5
Trade credits	3.2	2.6	4.9	2.8	1.8
Loans extended	7.9	8.4	11.9	10.4	9.3
Equities	0.2	0.7	0.1	1.0	7.0
Bonds	6.1	12.5	26.8	53.5	93.0
Other	5.5	4.7	7.1	7.6	6.4
Gross inflows	12.4	14.8	7.1	17.3	0.6
Net outflows	15.0	17.7	49.7	64.5	131.5

Source: Bank of Japan

Table 2: Japanese Holdings of Foreign Securities, As of December 1986

(in billions of dollars*)

Type of Institution	Total Assets	All Securities	Foreign Securities	Percent of Total Securities
Life insurance companies	$386	$156	$45.1	28.9%
Trust accounts	701	224	38.3	17.1
Nationwide banks	1,360	162	21.9	13.5
Regional banks	717	134	15.6	11.6
Trust banks' banking accounts	222	56	10.8	19.3
Long-term credit banks	301	62	10.4	16.8
Postal life insurance system	179	99	9.0	9.1
Other insurance companies	87	39	8.5	21.8
Total	3,953	932	159.6	17.1

*Converted into dollars at December 1986's average exchange rate of Y162.13=$1.00.

Source: Bank of Japan

It is likely, though, that there will be a modest diversification away from U.S. bonds. Some analysts have noted increased Japanese investment in Canadian dollar and Australian dollar bonds. Diversification will also take the form of increased purchases of U.S. equities and direct foreign investment in this country. Attracted by price/earnings ratios significantly below those in Tokyo, Japanese net purchases of U.S. stocks jumped from less than $1 billion in 1985 to an estimated $5 billion in 1986. Purchases of U.S. commercial real estate showed a similar increase last year.

Randall S. Jones

Finance Committee Completes Action On Trade Bill

On May 7 the Senate Finance Committee overwhelmingly approved S 490, its counterpart to the House omnibus trade bill. The consensus shown by the 19-1 vote reflects approval for the process rather than for the provisions of the bill, however. Ranking minority member Robert Packwood (R, Ore.) voted for S 490, but reportedly recommended that the White House veto it if the Senate and the eventual House-Senate conference committee do not moderate the legislation.

Despite the reservations of Sen. Packwood and other Republican members, the near-unanimity of the vote can be counted as a victory for committee chairman Lloyd Bentsen (D, Tex.). The markup process was an exercise in bipartisan compromise, resulting in several modifications of the original proposal. Many observers agree that Mr. Bentsen's emphasis on consensus-building was instrumental in developing broad support for passage of a trade bill, if not the specific provisions of S 490. Hence, some GOP legislators voted "yes" for a bill they do not presently support.

On the question of mandatory retaliation, the bipartisan spirit was at a peak. A compromise offered by Sen. Packwood sailed through the committee. It called for mandatory retaliation in response to a positive determination under Section 301 of the 1974 Trade Act only when unfair foreign trade practices violate a trade agreement. The president could choose not to retaliate in four instances: (1) if the General Agreement on Tariffs and Trade rules against the United States; (2) if an agreement is reached that is acceptable to the majority of the industry or the petitioner; (3) if retaliation would cause serious harm to national security; or (4) as a last resort, if the U.S. Trade Representative certifies that it would be impossible for the country to eliminate the practice and full compensation was provided.

In other areas a compromise was more elusive. Consequently, the committee adopted some provisions that GOP lawmakers and the White House found objectionable. For instance, the committee amended Section 201 of the 1974 Trade Act to require the president to provide relief to import-affected industries in certain circumstances. Given the administration's consistent arguments about the need for flexibility, its resistance to this provision was not surprising. Even with regard to issues on which there was no consensus, though, the debate was never completely partisan. Trade-conscious Republicans, especially John Heinz (R, Pa.) and John Danforth (R, Mo.), adopted, for the most part, positions as tough as the Democrats or even tougher.

In addition, the importance of the supplemental budget has grown in the face of difficulties brought on by the strong yen. Both domestic and international groups are urging prompt adoption of a stimulative budget to offset the negative impact of the yen and create additional demand for imports. Furthermore, Diet action would be required should the tax panel reach a compromise on a reform of the country's tax code.

Interwoven in these questions are political issues as well, principally the question of Yasuhiro Nakasone's tenure as president of the ruling Liberal Democratic Party and prime minister. Nakasone opponents view talk of extending the current session or calling an extraordinary session as a ploy to keep the prime minister in office despite pressure to resign before his presidential term expires in October. A call for an extraordinary session or an extension of the present session would mean that the Diet would probably be in session throughout the summer, thus justifying Mr. Nakasone's remaining in office through the rest of his term.

The dates most frequently proposed for an extraordinary session are either in June, following the Venice summit, or early August. Nakasone supporters favor the earlier scenario; opponents prefer a later starting date to maintain pressure on him to resign after the June summit. In substantive terms there is little difference between the legal domain implied by an extraordinary session or an extension of the present session, thus suggesting that the timing is more a political than a legal issue. Although a later starting date would give policymakers more time to resolve outstanding issues, extending the current session would eliminate the need to reintroduce measures currently pending.

The fact that Mr. Nakasone apparently favors an early session indicates his determination to remain in office at least through the remainder of his term, despite rumors in the press that the Venice summit will serve as his swan song. There was considerable speculation in the Japanese press in April that the prime minister would resign after his trip to the United States, particularly if it was judged a failure in Japan. While Mr. Nakasone admitted that the sessions with President Reagan did not completely alleviate the trade tensions between the two countries, the overall impression left by his Washington stay was not negative (see JEI Report No. 18B, May 8, 1987). At the very least observers are willing to give the prime minister an "A" for effort since the reaction in Japan to the talks was mild in comparison to the excitement leading up to the visit.

Michael W. Chinworth

Japan-EC Relations Reflect U.S. Tensions

With its hands already full trying to deal with U.S.-Japan economic relations, Tokyo is coming under pressure from the European Community to simultaneously address some contentious trade issues. EC officials are concerned that the community will suffer from recent U.S.-Japan trade agreements, in particular last year's semiconductor accord. In addition they are worried that Tokyo's lavish attention to relations with the United States will leave it little time to devote to continental affairs. Several EC proposals, however, are as unprecedented as the U.S. imposition of 100 percent tariffs on particular Japanese exports.

According to Ministry of Finance statistics, Japan's 1986 trade surplus with the EC increased almost 7 percent to Y2.8 trillion ($20.2 billion at Y140= $1.00) as exports rose 8.5 percent to Y5.2 trillion ($37 billion) and imports jumped 10.4 percent to Y2.4 trillion ($16.8 billion). Because the yen has appreciated 88 percent against the dollar since its February 1985 low but has only climbed about 9 percent vis-a-vis the European Currency Unit, authorities fear that Japanese exports to the continent will surge to compensate for lost profits in the American marketplace. Although the EC and Japan already monitor trade in a handful of major products, Washington's imposition of retaliatory tariffs on Japanese exports of 18- to 20-inch color televisions, certain power tools and 16-bit portable and desk-top computers sparked a reaction from Brussels: these same items were put under surveillance on May 6. European importers are now required to obtain import licenses for these items from the respective national authorities, but only so that accurate statistics can be compiled. Should imports of these products surge, EC Commissioner for External Trade Willy de Clerque warned, the community would consider imposing punitive tariffs.

The EC Commission is also considering pressing Tokyo for wider access to Japanese financial markets. This is of particular interest to British and West German authorities since Japanese institutions have been allowed to gain significant positions in their home markets. British ire over Tokyo's refusal to allow British banks greater freedom in Japan boiled over briefly in late April. Prime Minister Margaret Thatcher threatened to bar all Japanese companies from British financial markets under the authority of new reciprocity legislation unless British firms were granted more seats on the Tokyo Stock Exchange. Although London reconsidered the threat when it realized that the move would backfire, the fact that the government even considered such a move suggests the intense pressure that domestic interests are putting on European administrations.

In a related move, the EC is investigating the alleged dumping of dot matrix and daisywheel printers by Japanese firms. Japanese makers controlled nearly 75 percent of the European market for these computer peripherals in 1986, with combined sales of nearly 1.7 million units, while domestic makers' saw their share fall to only 7.5 percent. Europrint, a manufacturers association, accused Japanese exporters of dumping at margins of 40 percent on dot matrix and 50 percent on daisywheel printers. In addition, continental photocopying equipment concerns, having lobbied the EC to impose a 20 percent tariff on imports of Japanese copiers, are now anxious to extend the levies to copier parts in an effort to cripple "screwdriver" assembly plants set up by Japanese copier makers trying to avoid the duties. Despite strong support for the tariffs by some British firms, London is opposed to extending the duties because it may dampen Japanese investment in local plants.

At an April 30 meeting between Mr. de Clerque and Tetsuo Kondo, director general of the Economic Planning Agency, Mr. Kondo outlined the details of the second Maekawa report (see JEI Report No. 17B, May 1, 1987) and said that it would lead to reduced trade frictions with Japan's trading partners. Mr. de Clerque was not impressed and asked for immediate relief, including reductions in Japan's liquor tax. On May 11 Tokyo responded to another European request, announcing a May 14 seminar for European companies interested in bidding on construction contracts for the terminal facilities of the Kansai International Airport. Efforts to promote EC exports will take another step forward on June 1-5 when an EC official will travel to Japan for talks on cars, medical equipment and cosmetics. In addition, the EC delegation in Japan hopes to inaugurate a link with the Oita prefectural authorities to promote imports.

Jon Choy

Japan's Trade with the European Community, 1985-86

(in millions of yen and percent change)

	1985		1986	
	Exports	Imports	Exports	Imports
United Kingdom	Y1,131,670 2.3%	Y432,424 -9.3%	Y1,122,837 -0.8%	Y593,175 37.2%
West Germany	1,646,278 4.9%	699,831 10.1%	1,766,215 7.3%	725,473 3.7%
France	495,646 8.2%	316,740 8.1%	532,237 7.4%	311,671 -1.6%
Italy	265,350 8.4%	252,011 1.3%	290,424 9.4%	250,820 -0.5%
Netherlands	490,555 14.1%	105,210 2.5%	549,044 11.9%	97,356 -7.5%
Belgium	349,225 10.1%	116,082 4.5%	371,628 6.4%	113,847 -1.9%
Denmark	181,952 -18.7%	138,413 -33.9%	167,117 -8.2%	131,250 -5.2%
Ireland	61,273 4.3%	50,068 -11.5%	52,318 -14.6%	46,924 -6.3%
Luxembourg	3,745 58.0%	444 178.9%	3,954 5.6%	420 -5.4%
Greece	142,309 -23.4%	15,671 -10.8%	94,271 -33.8%	12,433 -20.7%
Portugal*	(41,176) 14.8%	(13,172) -21.9%	43,392 5.4%	14,109 7.1%
Spain*	(143,303) 14.7%	(83,660) -15.4%	180,282 25.8%	50,804 -39.3%
Total	4,768,004 3.7%	2,126,894 -3.8%	5,173,719 8.5%	2,348,282 10.4%

*Not included in 1985 figures because they joined the EC in January 1986.

Source: Japan Tariff Association, Summary Report: Trade of Japan.

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JAPANESE FISCAL POLICY IN FY 1987: CRACKS IN THE EDIFICE OF AUSTERITY?

Summary

After five years of rigorous fiscal austerity, the FY 1987 budget contains some surprises. While the general account budget remains tightly chained, strong growth is planned for the Fiscal Investment and Loan Program, Japan's capital budget. What makes this year particularly interesting, however, is the subject of tax reform. A reform program of historic proportions has been stalled in the Diet by opposition to a new value-added tax. With the entire tax plan for FY 1987 on hold, tax rules for the previous year remain in effect, throwing budget calculations out of kilter. Uncertainties over Prime Minister Yasuhiro Nakasone's political future as well as insistent calls from abroad for a shift in fiscal policy put the future of both austerity and tax reform in doubt. Japanese fiscal planners are clearly in for some difficult times.

An Ocean of Red Ink . . .

Mr. Nakasone and the Finance Ministry base their policy of fiscal austerity on the need to halt the growth of the national debt. The outstanding public debt as a percentage of gross national product jumped from 16.8 percent in fiscal 1977 to an estimated 43.5 percent in the current fiscal year. The share of current outlays devoted to interest payments on the debt is projected at 20.9 percent in FY 1987, more than double its FY 1977 8.2 percent level. Although Tokyo is rapidly restructuring its financial markets in order to roll over the debt with greater ease, concern over the future impact of the debt weighs heavily on the minds of policymakers.

To stem the red tide, zero growth of discretionary expenditures has been a budget rule for the past five years (see Tables 1 and 2). After great success in fiscal 1984, the policy has just managed to hold the line on spending in subsequent years. The effect of five years of tight budgetary controls is evident. Bond issues as a share of total revenues have fallen steadily from a peak of 39.6 percent in FY 1979 to a projected 19.4 percent this fiscal year, reflecting a steady decline in total issues to levels last seen in FY 1978 (just over Y10.5 trillion or $75 billion at Y140=$1.00).

. . . And an Economy About to Sink?

The strong dollar and robust American economy more than compensated for the deflationary effects of a no-growth fiscal policy in the mid-1980s. Although the U.S. economy outperformed Japan's in both 1983 and 1984, Tokyo was content to enjoy a growing trade surplus and steady overall growth. Today, in contrast, policymakers are not at all sanguine about economic prospects. The combination of a sharp appreciation of the yen against the dollar and slower U.S. economic growth has revealed the truth about the country's economic situation -- without significant fiscal stimulation, Japan's economy is highly vulnerable to the shrinking volume of exports. While a policy of fiscal austerity may indeed be the best long-term course, it has tied Tokyo's hands when dealing with the short-term problems of adjusting to the high yen and has also left it open to charges that it is not shouldering its global economic responsibilities.

As the U.S. economic locomotive loses steam, all eyes are turned to Japan and West Germany to take up the slack. Both governments have resisted, although for slightly different reasons. Bonn is worried about rekindling inflation and is quite satisfied with its economic growth performance. Tokyo, on the other hand, raises the deficit issue to ward off criticism. But as its global trade surplus hit levels previously recorded only by the entire Organization of Petroleum Exporting Countries in the 1970s, and its presence in foreign financial markets rose to new prominence, the credibility of this defense has eroded. In fact, a commission appointed by the prime minister has urged in two reports that Japan rapidly restructure its economy to emphasize domestic demand -- in part by loosening the fiscal purse strings (see JEI Report No. 7B, February 21, 1986, and No. 17B, May 1, 1987). These so-called Maekawa reports have apparently been given little more than lip service in Japan. While many regulatory changes have been made, most economists argue that fiscal stimulus must also play a role.

Under these difficult conditions, Japanese policymakers have struggled to balance the goals of debt reduction (which has a great deal of political weight behind it) and solid economic growth. The result is that while austerity continues to hold a hammerlock on the general account budget (the supplemental budget for fiscal 1986 actually reduced spending -- see Table 3), planners are pushing the Fiscal Investment and Loan Program to new heights.

Spending

The general account budget for FY 1987 shows that even Mr. Nakasone is being forced to make compromises (see Table 1). Investment in science and

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Table 1: Japan's General Account, FY 1983-FY 1987

(in billions of yen and percentage change)

	FY 1983 (revised)		FY 1984 (revised)		FY 1985 (revised)		FY 1986 (revised)		FY 1987* (initial)	
Total Expenditures	Y50,839.4	6.9%	Y51,513.4	1.3%	Y53,222.9	3.3%	Y53,824.8	2.5%	Y54,101.0	0.5%
Social Security	9,231.3	1.0	9,231.0	-0.0	9,830.8	6.5	10,090.3	2.6	10,089.6	2.6
Public Assistance	1,129.7	4.6	1,139.4	0.9	1,082.2	-5.0	1,110.4	2.6	1.110.1	0.4
Social Welfare	1,917.5	19.6	1,999.2	4.3	2,056.2	2.9	1,977.8	-3.8	2,015.8	6.1
Social Insurance	5,378.9	-4.9	5,347.9	-0.6	5,847.5	9.3	6,137.3	5.0	6,097.4	2.2
Health Service	435.4	2.3	467.0	7.3	464.4	-0.5	497.2	7.1	500.6	0.9
Unemployment	369.8	-1.1	367.5	-0.6	380.5	-0.6	367.6	-3.4	361.0	-0.9
Education and Science	4,834.3	0.0	4,866.5	0.7	4,904.3	0.8	4,886.6	-0.4	4,849.7	0.1
Compulsory Education	2,254.5	1.5	2,302.6	2.1	2,415.2	4.9	2,414.9	-0.0	2,362.3	-0.2
Transfer to School Account	1,015.6	0.0	1,071.7	5.5	1,075.1	0.3	1,083.7	0.8	1,111.4	2.9
Science Promotion	392.0	2.7	410.8	4.8	375.4	-8.6	381.8	1.7	400.6	2.5
School Facilities	489.8	-7.4	427.3	-12.8	385.5	-9.8	350.0	-9.2	314.6	-10.1
School Aid	592.0	-0.5	567.9	-4.1	569.6	0.3	575.7	1.1	578.8	0.3
Student Loans	90.3	-0.5	86.2	-2.3	83.6	-3.0	80.5	-3.7	82.0	1.6
National Debt Service	8,167.5	18.3	9,155.1	12.1	10,180.5	11.2	10,664.4	4.8	11,333.5	0.1
Pensions	1,890.0	-0.1	1,885.8	-0.2	1,863.7	-1.2	1,850.1	-0.7	1,895.6	2.5
Civil Servants	132.7	-2.0	128.2	-3.4	124.8	-2.7	121.4	-2.7	122.3	0.7
Veterans	1,603.6	0.9	1,601.1	-0.2	1,578.7	-1.4	1,562.6	-1.0	1,606.9	2.8
Administrative Costs	10.6	2.3	10.5	-0.9	10.4	-1.7	10.3	-0.0	8.9	-14.0
War-bereaved Families	143.1	-8.2	146.0	2.0	149.9	2.7	155.9	4.0	157.6	1.1
Local Finance	7,672.9	-3.8	9,219.0	20.2	9,690.1	9.0	9,734.7	0.5	10,184.1	-0.0
Local Allocation Tax	7,315.1	-2.9	9,036.1	23.5	9,690.1	6.8	9,734.7	0.5	10,184.1	-0.0
Special Grants	2.0	**	0.0	**	0.0	**	0.0	**	0.0	**
Interest Support	355.8	-19.4	182.9	-48.6	0.0	**	0.0	**	0.0	**
Defense	2,761.0	7.6	2,934.6	6.3	3,169.7	8.0	3,338.0	5.3	3,517.4	5.2
Public Works	7,224.3	-0.8	6,883.5	-4.7	6,922.3	0.6	6,946.3	0.3	6,082.4	-2.3
Erosion, Flood Control	1,107.4	0.1	1,098.5	-0.8	1,082.8	-1.2	1,101.4	1.7	1,060.8	-1.4
Road Improvement	1,893.3	0.1	1,899.9	0.4	1,856.1	-2.3	1,826.3	-1.6	1,740.4	-2.6
Harbors, Airports	524.1	0.3	519.8	-0.8	511.9	-1.5	517.3	1.1	496.5	-1.9
Housing	894.3	1.9	915.0	2.3	927.9	1.4	940.2	1.3	748.4	-1.1
Living Environment	988.2	0.1	980.3	-0.8	970.3	-1.0	989.0	1.9	947.4	-1.7
Agriculture	900.0	0.1	891.9	-0.9	879.0	-1.4	886.9	0.9	850.5	-2.0
Forest Roads and Water	177.1	-0.7	173.2	-2.2	169.6	-2.1	170.4	0.5	163.0	-2.4
Adjustment Reserves	11.4	-3.1	10.9	-3.7	10.7	-2.2	11.3	5.6	10.4	-1.9
Disaster Reconstruction	728.4	-9.6	394.0	-45.9	514.0	30.5	503.5	-2.0	65.1	-25.6
Economic Cooperation	498.2	4.9	543.9	9.2	581.3	7.5	600.5	3.3	649.2	4.2
Small-Business Measures	238.9	-2.2	229.2	-4.1	211.9	-8.0	225.6	6.5	197.3	-3.8
Energy Measures	557.4	-0.3	603.2	8.2	626.2	2.6	570.5	-8.9	495.2	-21.4
Food Price Supports	917.2	-8.8	813.2	-11.3	695.2	-14.0	613.8	-11.7	540.6	-9.3
Miscellaneous	4,383.9	-1.5	4,354.9	-0.7	4,346.9	-0.5	4,104.0	-5.6	3,916.3	-4.1
Others	2,252.5	**	125.3	**	0.0	**	0.0	**	0.0	**
Reserves	210.0	**	170.0	**	200.0	**	200.0	**	350.0	**
Total Revenues	50,839.4	6.9	51,513.4	1.3	53,222.9	3.3	53,824.8	2.5	54,101.0	0.0
Tax, Stamp Revenues	31,902.0	4.6	34,835.0	9.2	38,145.0	9.5	39,440.0	2.3	41,194.0	1.6
Monopoly Profits	1,004.2	31.8	1,024.6	2.0	6.6	-99.4	2,889.8	18.7	2,403.6	-6.9
Public Enterprise Receipts	15.1	5.1	15.4	2.0	15.9	3.2				
Sale of Public Properties	82.7	10.3	92.3	11.6	157.9	71.1				
Miscellaneous	3,843.3	107.2	2,282.6	-40.6	2,254.0	-1.3				
Public Bonds	13,790.0	-3.9	12,865.0	-6.7	12,438.0	-3.3	11,495.0	-1.6	10,501.0	-4.1
General	6,365.0	-2.3	6,225.0	-2.2	5,950.0	-4.4	5,700.0	-4.2	5,520.0	-3.2
Special	6,980.0	13.9	6,455.0	-7.5	5,730.0	11.2	5,795.0	1.1	4,981.0	-5.1

*Percentage changes for FY 1987 are based on the initial budget for FY 1986.
**Cannot be calculated or meaningless.

Source: Ministry of Finance

Table 2: Discretionary Spending in the General Account, FY 1983-FY 1987

(in billions of yen and percentage change)

	FY 1983		FY 1984		FY 1985		FY 1986		FY 1987*	
Total Expenditures	Y50,839.4	6.9%	Y51,513.4	1.3%	Y53,222.9	3.3%	Y53,824.8	2.5%	Y54,101.0	0.0%
Minus										
Debt Service and Transfers to Local Governments	15,482.7	7.2	18,191.2	17.5	19,870.6	5.0	20,399.1	2.7	21,517.6	0.1
Equals										
Discretionary Spending	35,356.8	6.8	33,322.2	-5.8	33,352.3	0.1	33,425.7	0.2	32,583.4	-0.0

*Percentage changes for FY 1987 are based on the initial budget for FY 1986.

Source: Ministry of Finance

Table 3: Supplementary Budget for FY 1986

(in millions of yen)

Increased General Account Expenditures	Y1,403,452
Public Works	549,021
General Public Works	133,000
Disaster Reconstruction	416,021
Promotion of Public Sector Vitality	3,304
Small Business Measures	25,236
Public Employee Wages	133,795
Relief for Northern Fisheries	19,562
Additional Compulsory Expenses	226,677
Special Grants for National Health Insurance	74,000
Housing and Urban Development Corporation Subsidy	173,926
Transfer to the Sinking Fund	8,647
Transfer to the Coal, Petroleum and Alternative Energy for Petroleum Special Accounts	151,000
Other	38,284
Decreased General Account Expenditures	-1,667,262
Reduction in Expenditures	-452,027
Decreased Debt Service Payments	-410,000
Decreased Transfers to the Coal, Petroleum and Alternative Energy for Petroleum Special Accounts	-150,000
Decrease in Grants-in-Aid transfers to Local Governments	-450,240
Decrease in Reserves	150,000
Net General Account Expenditures	-263,810
Increased Revenues	1,702,085
Tax and Stamp Revenues	648,000
Other Revenues	64,538
Public Bonds	549,000
Carried-over Surplus from FY 1985	440,547
Decreased Revenues	-1,965,900
Tax and Stamp Revenues	-1,768,000
Other Revenues	-197,900
Net Revenues	-263,815

Source: Ministry of Finance

technology, along with defense and foreign aid, has been one of his priorities. But while the latter categories have shown steady growth over the past few years, spending on science and technology has been battered. Expenditures for science in FY 1987 have not yet returned to the level recorded three years ago, while outlays for education in general remain stagnant. In contrast, healthy increases in defense and foreign aid (economic cooperation) are again slated for this fiscal year. Among all other categories, only social security expenditures have been allowed to rise.

The most striking cost-cutting is reserved for public works, where a cut has been planned for every line item. Planners have clearly sought every means to ease the pain. The deep cut in energy measures, for example, was made possible by weak global oil prices and the strong yen, while changing politics explain the reduction in food price supports. Pay increases for civil servants and other government employees are apparently to be postponed, since the miscellaneous category, which includes salaries, is set to decline by more than 4 percent.

In contrast to this gloomy picture, the budget for the Fiscal Investment and Loan Program is a bright spot with its projected 40.3 percent hike in spending (see Table 4). Many categories show double-digit increases, much of it for traditional public works projects. The addition of a new capital utilization item in FY 1987 is also encouraging since it will probably be used to start up major projects, such as the Tokyo Bay bridge. Even the FILP, however, shows some evidence of tight-fistedness. Spending for industry and technology as well as foreign trade and economic cooperation have been shifted back to the general account budget or to the private sector in order to conserve funds.

Revenues

If the debate over spending is heated, the controversy over tax policy is white hot. The basic shape of Japan's tax structure was set by the United States during the postwar occupation using its own system as a model. The Japanese system is characterized by a heavy dependence on highly progressive personal and corporate income taxes and a host of special commodity taxes usually linked to specific policies. The oil and gas tax, for example, is intended to promote energy conservation. (For a detailed breakdown of FY 1984 and FY 1985 tax receipts, see Table 5.) Popular dissatisfaction with the existing tax structure is centered on its highly progressive nature and its assessment methods. With an upper national tax bracket of 70 percent and top local rates at 18 percent, it is not surprising that resentment has grown in view of the steady rise in average income over the past several decades. Middle-class families in particular feel victimized by the system. More sensitive, however, is the issue of assessment.

Unlike salaried workers who have taxes withheld at the source, self-employed businessmen and farmers voluntarily report their income, making tax avoidance a relatively simple matter. According to popular belief, 90 percent of the income of salaried workers is taxed compared to 60 percent of those who are self-employed and only 40 percent for farmers. Not only do family-owned firms avoid taxes by under-reporting, but self-employed professionals, including doctors and lawyers, are also said to be discretely lightening their taxes. This assumption is a delicate issue since farmers and small businessmen are important voting blocs.

Table 4: Uses and Sources of Japan's Fiscal Investment and Loan Program Outlays, FY 1983-FY 1987

(in billions of yen and percentage change)

	FY 1983		FY 1984		FY 1985		FY 1986		FY 1987	
Total Outlays	Y20,702.9	2.0%	Y21,106.6	1.9%	Y20,858.0	-1.2%	Y22,155.1	6.2%	Y31,081.3	40.3%
Housing	5,304.1	3.4	5,289.5	-0.3	5,289.3	-0.0	5,856.2	10.7	6,328.2	8.1
Water Works	2,764.8	-3.4	3,007.5	8.8	3,280.9	9.1	3,694.5	12.6	3,998.7	8.2
Welfare	652.0	-7.0	637.9	-2.1	595.7	-6.6	625.9	5.1	627.7	0.3
Education	783.0	2.6	777.1	-0.8	745.3	-4.1	678.2	-9.0	784.1	15.6
Small Business	3,942.2	0.9	3,968.3	0.7	3,764.4	-5.1	3,700.0	-1.7	3,985.6	7.7
Agriculture	963.0	6.2	1,034.8	7.5	890.6	-13.9	902.1	1.3	907.8	0.6
Land Conservation, Disasters	332.5	7.4	379.1	13.8	472.8	24.7	422.7	-10.6	493.0	16.6
Roads	1,583.7	7.5	1,711.7	8.1	1,826.4	6.7	2,024.4	10.8	2,363.0	16.7
Transportation and Communication	1,924.6	-1.2	1,887.6	-1.9	1,763.4	-6.6	2,015.1	14.3	2,264.1	12.4
Regional Development	511.4	-5.0	500.0	-2.2	511.2	2.2	566.1	10.7	657.7	16.2
Industry and Technology	626.2	-1.5	620.3	-0.9	603.3	-2.7	635.9	5.4	630.9	-0.0
Foreign Trade and Economic Cooperation	1,315.4	18.2	1,292.8	-1.7	1,114.7	-13.8	1,034.0	-7.2	690.5	-33.2
Capital Utilization									3,350.0	*
Total Revenues	24,402.9	2.6	24,706.6	1.2	25,858.0	4.7	27,155.1	5.0	31,081.3	14.5
Industrial Investment Special Account	5.2	-72.5	4.8	-7.7	31.4	554.2	61.5	95.9	144.3	134.6
Trust Fund Bureau Fund	19,135.3	-2.2	18,905.2	-1.2	20,029.0	5.9	20,738.6	3.5	24,595.8	18.6
Postal Savings	7,900.0	0.0	6,900.0	-12.7	6,400.0	-7.2	7,000.0	9.4	7,900.0	12.9
Pensions	4,100.0	-4.7	3,850.0	-6.1	3,950.0	2.6	4,300.0	8.9	4,450.0	3.5
Payments, etc.	7,135.3	-3.2	8,155.2	14.3	9,679.0	18.7	9,438.6	-2.5	12,245.8	29.7
Postal Life Insurance Fund	2,354.4	18.8	2,586.6	9.9	2,587.6	0.0	3,145.0	21.5	3,941.2	25.3
Government-Guaranteed Bonds and Borrowings	2,908.0	31.0	3,210.0	10.4	3,210.0	0.0	3,210.0	0.0	2,400.0	-25.2

*Cannot be calculated or meaningless.

Note: All figures are based on initial budgets.

Source: Ministry of Finance

Table 5: Japan's National Tax and Stamp Receipts, FY 1984-FY 1985

(in billions of yen)

	FY 1984	FY 1985
General Accounts	Y34,908	Y38,199
Direct Taxes	26,281	28,517
Personal Income Tax	14,063	15,435
Withheld	11,041	12,249
Self-assessed	3,022	3,186
Corporate Income Tax	11,341	12,021
Inheritance and Gift Tax	877	1,061
Indirect Taxes	8,627	9,684
Liquor Tax	1,860	1,932
Tobacco Excise Tax	*	884
Sugar Excise Tax	42	41
Gasoline Tax	1,647	1,557
Liquified Petroleum Gas Tax	15	15
Aviation Fuel Tax	52	52
Petroleum Tax	388	400
Commodity Tax	1,495	1,528
Playing-card Tax	0.4	0.4
Bourse Tax	13	11
Securities Transaction Tax	506	671
Travel Tax	77	75
Admission Tax	8	5
Motor Vehicle Tonnage Tax	488	452
Customs Duty	692	639
Tonnage Duty	9	9
Others	0	0
Stamp Revenue	1,335	1,413
Special Accounts	848	951
Local Road Tax**	296	300
Liquefied Petroleum Gas Tax**	15	15
Aviation Fuel Tax**	9	9
Motor Vehicle Tonnage Tax**	163	151
Special Tonnage Duty	11	11
Customs Duty on Crude Oil	128	120
Energy Development Tax	227	233
Naphtha Tax*	*	111
Total	35,756	39,150

*New item.
**Revenue transfered to local governments.

Source: Ministry of Finance

The most recent tax reform effort began in 1985 when the ruling Liberal Democratic Party, at Mr. Nakasone's urging, began an internal study of the issue. After more than a year of discussion, Mr. Nakasone's tax commission and the LDP Tax System Council issued reports calling for the most thorough overhaul of the system since its inception (see JEI Report No. 44B, December 5, 1986). After inter-ministerial discussions, a tax reform package of seven bills including a 5 percent value-added tax was submitted to the Diet at the end of 1986 (see Appendix A).

Unfortunately, the LDP ran into trouble from the start. The opposition parties opposed any major new indirect tax, and in fact, Mr. Nakasone had promised not to introduce one during 1986 lower house elections (see JEI Report No. 25B, July 11, 1986). Every group that traditionally supported the LDP came out against the value-added tax, leading to some dissent within the party itself. Business was particularly unhappy that a wide number of companies and transactions would be exempt from the new tax, which would severely distort the incidence of the tax burden (see Appendix B). While Mr. Nakasone contended that the 5 percent value-added tax was not a "major" new tax, opposition parties rode a wave of popular resentment to gains in local elections. The opposition generated so much popular support that it managed to tie up passage of the FY 1987 budget beyond the April 1 start of the fiscal year, forcing the government to adopt a provisional budget (see Table 6).

Despite its overwhelming majority in the lower house, the LDP was unable to push the budget and tax reform plan through the Diet due to the unhealthy political climate. In a major blow to Mr. Nakasone's political position, the entire tax package was shunted into a special parliamentary committee in late April. Although this cleared the way for the passage of the budget, it doomed the value-added tax for the current fiscal year. The LDP and the opposition parties agreed May 12 to drop the tax but to continue considering other elements of the reform package, including income and corporate tax reductions, changes in the tax-exempt savings system and a restructuring of the tax on alcoholic beverages.

Outlook

The personal and corporate income tax reductions are almost certain to be adopted during an extraordinary Diet session late this summer. In addition, Mr. Nakasone will press for passage of a large supplementary spending bill in order to deliver on his pledge to stimulate the economy. Exactly how the tax cuts and extra spending will be paid for is unclear. With the FY 1987 tax bill on hold, the previous year's tax provisions remain in effect. (For a listing of these provisions, see JEI Report No. 16A, April 25, 1986.) While the potential for a revenue shortfall exists (since FY 1986 tax projections are generally lower), Finance officials report that revenues are running ahead of projections so far this year.

In light of the value-added tax rebellion, the LDP may find it very difficult to raise existing taxes or implement new levies. The problem is equally prickly for the opposition parties because they are fully involved in the special Diet committee considering tax reform. The opposition is solidly in favor of income tax cuts but has few ideas on how to pay for them. The simple solution is to issue more deficit bonds but the Ministry of Finance remains publicly opposed to any backsliding in the drive to reduce the deficit. While the

Table 6: Provisional General Account Budget, FY 1987

(in billions of yen)

Expenditures	Y8,829.0
Social Security	1,722.0
Public Assistance	181.8
Social Welfare	375.6
Social Insurance	1,021.5
Public Health Insurance	82.9
Unemployment	60.2
Education and Science	510.9
Compulsory Education	260.3
Transfer to School Account	116.6
Science Promotion	22.6
School Facilities	77.3
School Aid	18.7
Student Loans	15.4
National Debt Service	1,154.8
Pensions	470.1
Civil Servants	30.4
Veterans	402.3
Administrative Costs	1.3
War-bereaved Families	36.1
Local Finance	2,197.2
Defense	460.5
Public Works	1,861.8
Erosion, Flood Control	300.7
Road Improvement	493.8
Harbors, Airports	140.4
Housing	213.6
Living Environment	410.6
Agriculture	240.5
Forest Roads and Water	46.1
Adjustment Reserves	0.0
Disaster Reconstruction	16.0
Economic Cooperation	2.9
Small-Business Measures	8.3
Energy Measures	0.4
Food Price Supports	0.0
Miscellaneous	420.1
Reserves	20.0
Total Receipts	2,530.7
Tax, Stamp Revenues	878.0
Other Revenues	72.7
Public Bonds	1,580.0
Deficit*	6,298.3

*Deficit will be financed by issuing Treasury Financing Bills as necessary.

Source: Ministry of Finance

idea of stretching out the debt reduction timetable has been mentioned in the past and there have been some rumors in the Japanese press that austerity is losing its unanimous support in the Ministry of Finance, no one idea has gained ascendency. The likeliest scenario appears to be an increase in existing commodity taxes, the implementation of some new consumption taxes (perhaps on telecommunications, for example), the liquidation of some government holdings in ex-monopolies (including the astronomically high stock of Nippon Telegraph and Telephone Corp.), and new issues of construction bonds tied to specific projects. (Constructions bonds are considered distinct from deficit financing bonds, so it is possible to rationalize that these issues do not add to the deficit.) Only time will truly tell, however.

For further information, contact Jon Choy.

* * * * * *

The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

Appendix A: FY 1987-89 Tax Reform Proposal

Individual Taxes

1. The number of personal income tax brackets at the national level will be reduced from 13 to 11 in 1987, and then to six in 1988. The maximum rate will decline from 70 percent to 60 percent in 1987 and then to 50 percent in 1988 (see Table a).

2. At the local level the number of personal income tax brackets will be reduced from 15 to 12 in FY 1987, and then to six in FY 1988 (see Table b).

3. A special deduction of up to Y112,500 of a spouse's income can be taken in FY 1987

4. The spouse deduction rises to Y150,000 on national tax returns and Y120,000 on local tax returns beginning in FY 1988.

5. The basic deduction for dependents rises from Y260,000 to Y280,000 for local taxes.

6. Special deductions for public pensions and senior citizens go into effect.

Corporate Taxes

1. Reduction of basic rates and abolition of the reduced rate for distributed profits by 1988 (see Table c).

2. Imposition of a 20 percent tax on dividend income by FY 1989.

3. Phase-out of the tax exemption on reserves for bonuses over a four-year period.

Sales Taxes

1. Imposition of a 5 percent value-added sales tax beginning in January 1988, except for car sales, which will be subject to an 11 percent levy. Companies with annual sales of less than Y100 million will be exempt from the tax, as will the following items: school textbooks; artificial teeth, eyes, arms, legs and other tools for the handicapped; medical treatment without social insurance coverage; and renting of condominiums and other properties. The VAT will be added to existing liquor and tobacco taxes. (For an example of how the sales tax will work, see Appendix B.)

2. In regard to the existing 29 consumption taxes, 20 will be retained (including the gasoline and petroleum taxes), eight will be eliminated (commodity, playing card, admission, travel, sugar, electricity, gas and timber delivery), and one will be restructured (liquor; see Table d).

Interest Income

1. The tax exemption for interest paid on postal savings accounts or special bank deposits of up to Y3 million (the small saver's system or maruyu) will be abolished. Accounts held by senior citizens, the handicapped and one-parent households will still be exempt.

2. Beginning October 1987, a 20 percent withholding tax on interest income from all postal savings or bank deposits will be imposed.

3. A 10 percent tax on interest earned on pension or housing accounts of Y5 million or less will be imposed from October 1987.

4. A 20 percent tax on tax shelters and an 18 percent tax on discount bank debentures and government bonds will be imposed from October 1987.

Housing Deductions

1. The period when a certain percentage of home purchase costs may be deducted will be increased from three to five years.

Securities Transaction Tax

1. The tax on the sale of convertible bonds will be increased from 0.045 percent to 0.26 percent effective FY 1987.

Registration and License Tax

1. Levies will be increased by 50 percent across the board, including real estate transactions, chip registrations, incorporations, medical licenses, patent and copyright fees, and banking and business licenses.

Estimated Revenue Effects of Proposed FY 1987 Tax Reforms

(in billions of yen)

	First Year	Out Year
Individual Income Tax Reduction		
Rate changes	Y-621	Y-1,533
Special spouse deduction	-261	-350
Special FY 1987 treatment for spouse	-133	0
Other special deductions	-3	-67
Total	-1,018	-1,950
Corporate Income Tax Reductions		
Rate changes	-403	-1,531
Interest Tax Changes	45	957
Sales Tax		
Creation of 5 percent value-added tax	1,103	4,971
Abolition of certain commodity taxes	-389	-2,408
Others		
Abolition of bonus payment reserve	397	43
Increased incentives for home buyers	0	94
Increase in securities transaction tax	92	37
Increased bourse tax	14	14
Increased registration and license tax	159	0
Total	0	39

a. National Personal Income Tax Rates

(in millions of yen and percent)

1986		1987		1988	
Taxable Income	Rate	Taxable Income	Rate	Taxable Income	Rate
Y0.5 or less	10.5%	Y0.5 or less	10.5%		
0.5 to 1.2	12.0	0.5 to 1.2	11.0	Y1.2 or less	10.0%
1.2 to 2	14.0	1.2 to 2	14.5		
2 to 3	17.0	2 to 3	16.0		
3 to 4	21.0				
		3 to 5	20.0	1.2 to 5	15.0
4 to 6	25.0				
		5 to 7	25.0	5 to 7	20.0
6 to 8	30.0	7 to 8	30.0		
8 to 10	35.0	8 to 10	30.0	7 to 10	30.0
10 to 12	40.0	10 to 12	40.0		
12 to 15	45.0	12 to 15	45.0	10 to 15	40.0
15 to 20	50.0			Over 15	50.0
20 to 30	55.0	15 to 30	50.0		
30 to 50	60.0	30 to 50	55.0		
50 to 80	65.0	Over 50	60.0		
Over 80	70.0				

b. Local Personal Income Tax Rates

(in millions of yen and percent)

1986		1987		1988	
Taxable Income	Rate	Taxable Income	Rate	Taxable Income	Rate
Municipal Inhabitants Tax					
Y0.2 or less	2.5%				
0.2 to 0.45	3.0				
		Y0.6 or less	3.0	Y0.6 or less	3.0
0.45 to 0.7	4.0				
0.7 to 0.95	5.0				
		0.6 to 1.0	5.0	0.6 to 1.3	5.0
0.95 to 1.2	6.0				
		1.0 to 1.5	6.0		
1.2 to 2.2	7.0				
2.2 to 3.7	8.0	1.5 to 3.7	8.0	1.3 to 5.0	8.0
3.7 to 5.7	9.0	3.7 to 5.7	9.0		
5.7 to 9.5	10.0	5.7 to 9.5	10.0	Over 5	11.0
9.5 to 19	11.0	9.5 to 19	11.0		
19 to 29	12.0	19 to 29	12.0		
29 to 49	13.0	Over 29	13.0		
Over 49	14.0				
Prefectural Inhabitants Tax					
Y1.5 or less	2.0%	Y1.2 or less	2.0%	Y5 or less	2.0%
Over 1.5	4.0	1.2 to 3.7	3.0		
		Over 3.7	4.0	Over 5	4.0

c. Corporate Income Tax Rates

(in percent)

	FY 1986	FY 1987	FY 1988	FY 1989
Basic Rates				
Retained profits	43.3%	42.0%	40.0%	37.5%
Distributed profits	33.3	34.0	35.0	37.5
Small-Corporation Rates*				
Retained profits	31.0	30.0	29.0	28.0
Distributed profits	25.0	26.0	27.0	28.0
Cooperatives and Nonprofit Corporation Rates**				
Retained profits	28.0	27.0	27.0	27.0
Distributed profits	23.0	25.0	26.0	27.0

*Corporations with equity capital of less than Y100 million and profits less than Y8 million.

**Also includes medical-care corporations.

Notes: New rates will apply to books closed after April 1, 1987; rates for liquidation and construction corporations will be adjusted.

d. Liquor Taxes

(in yen per kiloliter)

	Typical Alcohol Content	Current Tax	New Tax
Sake, Special class	15%	Y570,600	*
First class	15	279,500	Y218,500
Second class	15	107,900	67,800
Synthetic Sake	15	81,500	55,100
Shochu, Type A	25	78,600	52,100
Type B	25	50,900	21,900
Mirin, Type A	13.5	74,100	40,700
Type B	22	63,500	39,400
Beer	n.a.	239,100	206,100
Fruit Wine, Pure	n.a.	60,400	*
Other	n.a.	49,700	20,100
Sweetened Wine	12	117,300	63,900
Whiskey and Brandy, Special class**	43	2,098,100	1,636,380
First class**	40	1,011,400	1,522,200
Second class***	37	296,200	*
Other Spirits	37	361,800	243,800
Liqueurs, Type A	15	367,000	*
Type B	12	117,000	63,900
Miscellaneous Liquors	12	117,300	63,900

*Combined with following category.

**Although Special class whiskey and brandy will be classified with First class, figures are calculated on different alcoholic strengths.

***Second class whiskey and brandy will be classified with Other Spirits.

Appendix B: Value-added Tax Example

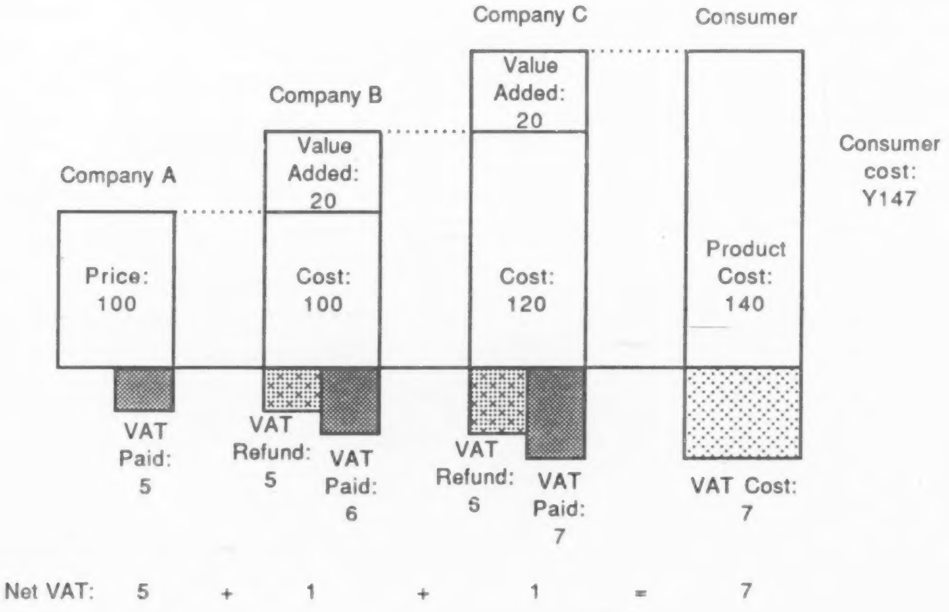
a. Transactions with non-tax-exempt firms

1. Company A imports a raw material and sells some to Company B for Y100. Company A pays the entire 5 percent tax, equal to Y5, since this is an initial transaction.

2. Company B processes the raw material, adding Y20 worth of value before selling it to Company C for Y120. Company B must pay 5 percent of Y120 or Y6, but can claim a deduction for the Y5 Company A paid when it sold the raw material.

3. Company C processes the goods it bought from Company B, adding another Y20 worth of value. Company C then sells the final goods to the consumer for Y140. Company C must pay Y7 in sales tax, but since it can claim a deduction for the Y6 Company B paid, its net liability is Y1.

4. The consumer is faced with a total cost of Y147: Y140 in actual product costs, and Y7 in sales tax. Therefore, the entire transaction yields Y7 to the government in taxes.


Company A
Price: 100
VAT Paid: 5
Company B
Value Added: 20
Cost: 100
VAT Refund: 5
VAT Paid: 6
Company C
Value Added: 20
Cost: 120
VAT Refund: 6
VAT Paid: 7
Consumer
Product Cost: 140
VAT Cost: 7
Consumer cost: Y147
Net VAT: 5 + 1 + 1 = 7

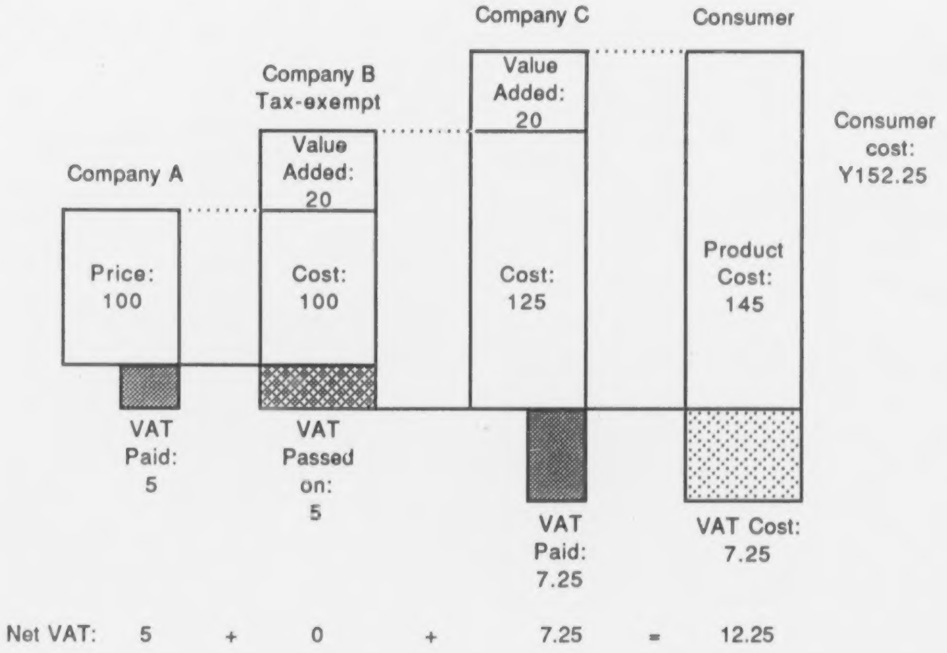
b. Transactions with tax-exempt firms

1. Company A imports a raw material and sells some to company B for Y105: Y100 worth of goods, plus Y5 in sales tax. Company A pays the entire 5 percent tax, equal to Y5, since this is an initial transaction.

2. Company B is tax-exempt. It processes the raw material, adding Y20 worth of value before selling it to Company C for Y125.

3. Company C processes the goods, adding another Y20 worth to its value before selling it to the consumer. Company C must pay Y7.25 in sales tax (5 percent of Y145) and it cannot claim any deduction from the previous transaction since Company B is tax-exempt.

4. The consumer is faced with a total price of Y152.25: Y145 in product cost, and Y12.25 in sales tax. Under this circumstance, the entire process yields Y12.25 in taxes and unevenly distributes the tax burden among the three companies.


Company A
Price: 100
VAT Paid: 5
Company B Tax-exempt
Value Added: 20
Cost: 100
VAT Passed on: 5
Company C
Value Added: 20
Cost: 125
VAT Paid: 7.25
Consumer
Product Cost: 145
VAT Cost: 7.25
Consumer cost: Y152.25
Net VAT: 5 + 0 + 7.25 = 12.25

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IN THIS ISSUE:

OECD Meeting Stresses Agricultural Reform 1

Tokyo Tries To Discourage Currency Speculation 2

Financial Affairs Update 3

Fuel For The Energy Debate 5

DOD Releases Burdensharing Report 6

Nikaido Enters LDP Presidential Race 8

Quota Auctions: Economist's Dream Or Administrator's Nightmare? 10

Notes: Value-Added Tax Dropped 12

Statistical Supplement 13

OECD Meeting Stresses Agricultural Reform

At the ministerial meeting of the Organization for Economic Cooperation and Development in Paris May 12-13, the 24 member-governments called for a reduction in farm subsidies and a liberalization of agricultural trade. Farm support programs in the OECD countries cost more than $100 billion a year and have created huge agricultural surpluses. Officials at the meeting agreed in principle to a "progressive and concerted reduction of agricultural support" to allow market signals to play a greater role in determining farm production. Governments should support farmers' incomes directly, they concluded, rather than provide price supports that encourage farmers to produce more food.

According to Japan's Institute for Energy Economics, the nation's total energy consumption actually declined in fiscal 1986 for the first time in four years. The institute attributed the 0.4 percent drop, which lowered consumption to 422 million kiloliters of crude oil equivalent, to a 5 percent decline in coal usage due to the depressed state of the steel industry. The institute predicted that energy use would rise 1 to 2 percent during FY 1987 while the landed price of an average barrel of crude oil would rise from $13.67 to $15.63.

The decline may be a temporary condition caused by the negative economic impact of the higher yen, but MITI argues that changes in the underlying economic structure will lead to a long-term decline in consumption. MITI's Advisory Committee for Energy has agreed to revise the ministry's long-term outlook to take into consideration the increasing importance of the service sector and the growth of light, knowledge-intensive industry. The current long-term plan, formulated in November 1983, projects consumption at 530 million kiloliters of crude oil equivalent by FY 1995, a jump of nearly 21 percent over FY 1985's level of 439 million kiloliters. The new projection will estimate demand through the year 2000 and will be completed in September.

Japan's current disagreement with Canada over coal prices is an example of how painful adjusting to lower energy demands can be. In the early 1980s Japanese steel producers signed long-term contracts with Quintette Coal Ltd. of British Columbia for deliveries at approximately $70 a metric ton. Quintette began supplying coal only after significant investment by the Canadian government in roads and port facilities. With current world prices in the range of $44 a metric ton, it is not surprising that hard-pressed steel makers are pushing for a sharp reduction in Quintette's price. With debts of over $500 million, however, Quintette can ill-afford to lower its price and warns that it may be forced to close, disrupting the provincial economy. The Canadians insist that the Japanese honor the contract price, while the Japanese are equally insistent on a lower price. Steel mills are threatening unilateral action if an agreement is not reached soon.

Jon Choy

DOD Releases Burdensharing Report

The Department of Defense's annual "Report on Allied Contributions to the Common Defense" concludes that while Japan and many other U.S. allies are "making a substantial contribution to the common defense [and] are certainly doing much better than is commonly recognized," continued efforts toward improving the defense capabilities of these countries is necessary, not because of the "fair share" argument but as part of an ongoing process to enhance defensive capabilities.

The study, which examines defense spending by Japan, the North Atlantic Treaty Organization countries, Spain and France, points out that Japan's overall contributions compared with its economic status place it last or next to last in every indicator category (see Table). It goes on to declare, however, that "Japan recognizes this and in fact has achieved the second highest percentage change in real defense spending from 1971 to 1985" among the 16 countries surveyed. The report singles out above-average spending for naval

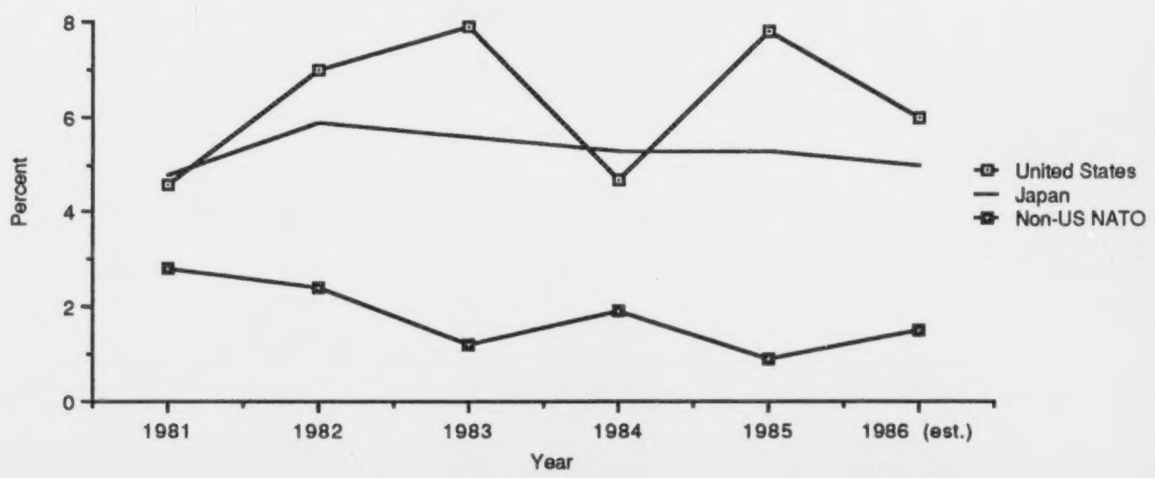
Comparison of Selected Indicators of Japan's Burdensharing

Indicators of Ability to Contribute	Percentage	Rank
Share of total gross domestic product	16.86%	2
Share of total population	15.93	2
Per capita GDP (percent of highest nation)	70.30	5
Indicators of Contributions*		
Share of aggregate defense spending	3.60%	5
Share of aggregate active defense manpower	3.21	8
Share of aggregate active/reserve manpower	2.22	9
Share of aggregate ground force division equivalent firepower (DEF)	3.70	9
Share of aggregate tactical combat aircraft	3.81	7
Share of aggregate naval tonnage (all ships less SSBN)	3.13	5
Change in defense manpower (1971 vs. 1985)	3.38	5
Change in defense spending in real terms (1971 vs. 1985)	131.84	2
Contributions vs. Ability to Contribute (ratios)		
Share of defense spending:GDP share	0.21	16
Active manpower:population	0.20	16
Active/reserve manpower:population	0.14	16
Ground forces DEF:GDP share	0.22	15
Combat aircraft share:GDP share	0.23	15
Naval tonnage share:GDP share	0.19	15

*Except as indicated, reflects Japan's share of the relevant indicator for the 16 countries surveyed.

Growth in Real Defense Spending, 1981-86

(Annual percent change)



Source: U.S. Department of Defense, Report on Allied Contributions to the Common Defense: A Report to the United States Congress, April 1987.

defense, noting that "Japan has more than twice as many destroyers and more than three times as many anti-submarine aircraft defending its territory as [this country] has defending the continental United States." (This is to be expected given Japan's emphasis on maritime defense and the nature of potential security threats.)

Japan also scores points in the DOD survey for its "strong political statement" in support of the Strategic Defense Initiative, as well as for the $1.26 billion spent in FY 1986 in direct and indirect support for U.S. forces stationed in Japan. (The figure would be considerably higher at current exchange rates.) Of the FY 1986 total, 29.2 percent came from the non-defense budget. "Owing to this voluntary GOJ program, which began at $100 million in 1979, the U.S. has an excellent base structure in Japan which greatly aids U.S. capability to defend its own and allied interests in the Far East and has greatly improved the morale of U.S. forces stationed in Japan," the report concludes.

In a special section analyzing Japan's performance in fulfilling its defense goals, including protection of the sealanes approaching the country to a distance of 1,000 nautical miles to the south and east, the report concludes that present defense budgets will enable the country to obtain "the necessary minimum to meet its defense goals if the remaining three years [of the government's five-year procurement program] are also fully funded." It adds that "Japan's progress in defense, particularly in view of [government] budget austerity, . . . is appropriate for a full-fledged ally."

The burdensharing report, which is required annually by the U.S. Congress, is perhaps more upbeat in terms of Japan than previous years, although they, too, were generally favorable. Moreover, this year's analysis of Japan-related defense issues is far more extensive than previously. The tone of the report stands in contrast with more contentious issues between the two countries, such as technology transfers, but helps maintain a steady working relationship between DOD and the Japan Defense Agency by illustrating Japan's defense contributions in a broader light and thus diffusing many of the political pressures associated with bilateral defense issues. At the same time, from the DOD perspective, it articulates department interests and maintains subtle, yet unabrasive, pressure on Japan to maintain the momentum toward fulfilling its defense goals.

Michael W. Chinworth

Nikaido Enters LDP Presidential Race

Former Liberal Democratic Party vice president Susumu Nikaido May 14 tossed his hat into the race for the party presidency, throwing a monkey wrench into an already complex situation. The surprise announcement increased to four the number of potential contenders for the position, which is tantamount to election as prime minister, including the party's three "new leaders" -- Finance Minister Kiichi Miyazawa, LDP secretary general Noboru Takeshita and LDP executive council chairman Shintaro Abe.

The announcement took party elders by surprise and followed the release of Mr. Takeshita's official political biography, which includes veiled references to ambitions of becoming the party's leader. The move complicates the

STATISTICAL SUPPLEMENT

Trade and Payments Data

(in millions of dollars unless otherwise indicated)

	1985	1986	January-March 1986	January-March 1987	January 1987	February 1987	March 1987
Japan's Balance of Payments							
Trade Balance	$55,986	$92,827	$14,552	$23,159*	$5,703*	$8,138*	$9,318*
Exports (f.o.b.)	174,015	205,591	44,813	50,379*	14,646*	16,744*	18,989*
Imports (f.o.b.)	118,029	112,764	30,261	27,220*	8,943*	8,606*	9,671*
Current Account Balance	49,169	85,845	12,668	20,585*	4,951*	7,381*	8,253*
Long-Term Capital (net)	-64,542	-131,461	-18,990	-32,455*	-12,322*	-11,396*	-8,737*
Overall Balance	-12,318	-44,767	-5,695	-4,872	-7,036	-2,650	4,814
International Reserves (end of period)	26,510	42,239	27,917	58,389	51,459	51,730	58,389
Japan's Customs Clearance Trade							
Trade Balance	46,099	82,743	12,494	19,539	4,303	7,136	8,100
Exports (f.o.b.)	175,638	209,151	45,499	51,478	14,901	17,242	19,336
Cars	25,402	32,945	6,516	7,477	2,737	2,676	2,064
Steel	13,566	12,706	2,867	2,837	818	933	1,086
Imports (c.i.f.)	129,539	126,408	33,005	31,940	10,598	10,107	11,235
Crude Oil	34,599	19,481	8,538	5,338	1,758	1,789	1,791
Japan-U.S. Trade							
Trade Balance	39,485	51,401	10,418	11,041	3,283	3,971	3,787
Exports (f.o.b.)	65,278	80,456	16,696	18,003	5,599	6,212	6,192
Imports (c.i.f.)	25,793	29,054	6,278	6,961	2,316	2,241	2,404
U.S.-Japan Trade							
Trade Balance (f.a.s./c.i.f.)	-49,749	-58,575	-15,315	-14,373	-4,360	-5,065	-4,947
Exports (f.a.s.)	22,631	26,882	5,574	5,959	1,785	2,035	2,139
Imports (c.i.f.)	72,380	85,457	20,888	20,331	6,146	7,100	7,086
Trade Balance (f.a.s./Customs)	-46,152	-55,030	-14,374	-13,571	-4,115	-4,790	-4,666
Exports (f.a.s.)	22,631	26,882	5,574	5,959	1,785	2,035	2,139
Industrial Supplies	8,680	8,752	2,091	2,269	716	725	828
Capital Goods	5,939	6,728	1,476	1,510	404	559	547
Food and Feed	5,001	5,043	1,239	1,129	339	399	391
Consumer Goods	1,416	1,690	385	522	141	160	221
Imports (Customs)	68,783	81,911	19,948	19,529	5,901	6,825	6,804
Automotive Products	24,980	32,849	7,371	7,748	2,476	2,781	2,491
Capital Goods	21,516	25,334	6,381	6,626	1,916	2,246	2,464
Consumer Goods	14,017	15,451	3,971	3,054	861	1,105	1,088
Industrial Supplies	7,035	6,949	1,929	1,808	559	595	654

*Preliminary

Japanese Economic Indicators

(percentage change from year-earlier period unless otherwise indicated)

	1985	1986	January-March 1986	January-March 1987	January 1987	February 1987	March 1987
Discount Rate (end of period)	5.0%	3.0%	4.0%	2.5%	3.0%	2.5%	2.5%
Outstanding Money Supply	8.4%	8.7%	9.0%	8.8%*	8.6%	8.8%	9.0%*
Industrial Production	4.0%	-0.3%	1.3%	0.5%*	0.5%	0.0%	0.9%*
Manufacturing Operating Rate	1.2%	-4.8%	-1.8%	n.a.	-4.3%	-3.7%	n.a.
Number of Bankruptcies	-9.7%	-7.1%	-10.8%	-14.4%	-6.5%	-14.9%	-20.7%
Residential Construction Starts	4.1%	10.4%	5.5%	12.3%	10.3%	13.4%	12.8%
Job Openings to Applications (ratio)	0.68	0.62	0.65	0.62	0.61	0.62	0.63
Nominal Wages	3.6%	3.5%	4.7%	2.6%*	2.5%	2.3%	3.0%*
Labor Productivity	4.2%	2.3%	2.6%	n.a.	n.a.	n.a.	n.a.
Wholesale Prices	-1.1%	-9.3%	-6.4%	-8.7%	-10.3%	-9.1%	-6.8%
Consumer Prices	2.0%	0.6%	1.6%	-0.9%	-1.1%	-1.0%	-0.5%
Yen-Based Export Prices	-1.4%	-14.5%	-14.1%	-7.7%	-9.8%	-7.1%	-6.2%
Yen-Based Import Prices	-2.5%	-34.7%	-21.8%	-27.1%	-34.0%	-29.1%	-16.2%

*Preliminary.

For Japan's most recent GNP figures, see JEI Report No. 12B, March 27, 1987.

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REPORT

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U.S. EXPORTS TO JAPAN: A REVIEW OF 1986 SALES

Summary

Economists weighing the near-term prospects for U.S. exports to Japan at the end of 1985 concluded almost unanimously that the sluggish state of the Japanese economy would cancel out most of the competitive benefits of the dollar's continuing drop against the yen. When the 1986 sales numbers were tallied, however, the consensus projection seemed to be way off base. Exports after all had climbed 18.8 percent to $26.9 billion in their strongest performance since 1979. But a closer look at the figures revealed that nearly three-fourths of this jump reflected a one-time $3.1 billion shipment of foreign bullion through the United States to Japan. Sales of domestically produced goods, it turned out, were up by only 5 percent -- just enough to make up for 1985's export decline.

Fortunately for most U.S. exporters, last year's sales results were better than the bottom line indicated. The capital goods category strengthened its four-year position as the export bellwether by expanding 13.3 percent to $6.7 billion, while consumer goods reversed course and advanced 19.4 percent to $1.7 billion. Moreover, sales of high value-added food products and intermediate goods increased, often by substantial margins. But in a repeat of what had happened in 1985, exports of most bulk agricultural and industrial supplies could not overcome the triple handicap of limited or no growth in the Japanese market, lower international commodity prices and stiff competition from third-country suppliers. This outcome took a heavy toll on the export total as sales of industrial supplies inched back just 0.8 percent to $8.8 billion and the outflow of food and feed edged up by the same slim margin to $5 billion.

Export Profiles

Industrial Supplies - American suppliers of industrial raw materials and intermediate inputs beat long odds in 1986 when they regained the export business lost in Japan the year before. The only factor working in favor of a turnaround was the dollar's continuing fall against the yen. Coming on top of 1985's 20.2 percent drop, the 20.6 percent decline in the American currency over the course of last year unquestionably gave U.S. exporters a powerful sales weapon. The biggest unknown was whether the weaker dollar could counter the demand-dampening effects of the first downturn in 11 years in Japanese industrial output. There was also some question about how American companies would fare in the increasingly tough international competition to supply Japan's industrial input requirements, particularly since the currencies of several rivals move in synch with the dollar. Moreover, it was clear from 1985's experience that U.S. exporters had less room to exploit the competitive problems of energy-intensive Japanese industries because lower oil prices and the weaker dollar had enabled them to get a better handle on their high production costs.

Increased sales of a surprisingly long list of intermediate products last year demonstrated the competitive benefits of the dollar's depreciation. Logs and lumber, however, provided the most vivid example since exports jumped 24 percent to $1.1 billion even though residential construction activity and inventory levels signaled no growth. Japanese housing starts did increase in 1986 for the third straight year, reaching their highest level since 1978, but this expansion promised little extra business for sawmills, whether domestic or foreign, because of the ongoing decline in both the number of wood houses built and their average floor space. Moreover, unlike 1985, Japanese wholesalers and sawmills entered last year with ample stocks of North American softwood logs.

What transformed 1986 into a big year for Pacific Northwest log and lumber exporters was the pricing flexibility the weaker dollar gave them. For starters, price cuts as deep as 40 percent enabled U.S. suppliers of softwood logs to contain a major Japanese sales push by their chief rivals, the Soviets, and to recapture some of the additional market share won in 1985 by Canada, the number-three supplier. More importantly, bargain prices on American softwood logs enticed Japanese sawmills to switch part of their purchases from domestic supplies, normally the source of roughly one-half of the country's softwood lumber, to the United States. Shipments soared as American producers took sales from their Canadian competitors.

Exporters of paper base stocks profited as well from the weaker dollar. But they had some help in boosting sales 19.9 percent to just under $0.6 billion since the paper and paperboard industry was one of the few Japanese basic industries to expand output in 1986. This expansion was achieved in part by increased usage of waste paper -- a plus for American recycling centers but a blow to producers of softwood chips, which were also stymied by the continuing shift in Japanese production from kraft and other brown papers to white papers made from hardwood chips. At the same time, though, U.S. wood pulp suppliers picked up business that in earlier years would have gone to Japanese mills or Canadian competitors.

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Much to the frustration of struggling American suppliers of inputs used by Japan's other basic industries, the weaker dollar proved to be a paper weapon. Take petrochemicals for example. Japanese manufacturers of ethylene -- the basic building block for such petrochemical intermediates as ethylene dichloride, ethylene glycol and acrylonitrile -- managed to bring their production costs closer to internationally competitive levels in 1986, thanks in large part to a slide in the price of naphtha, the industry's dominant feedstock and fuel, but also because the most inefficient third of their capacity remained mothballed. Falling oil prices also gave producers of benzene, the raw material for derivatives like styrene monomer, help on the cost front. The result was predictable: Japanese petrochemical makers were again able to thwart attempts by American exporters to supply more of the slow-growing demand for commodity products in downstream industries like plastics.

U.S. suppliers of industrial inorganic chemicals continued to have a major cost advantage over their Japanese counterparts in commodity products. Yet because of reduced demand in virtually all end-user industries, they were generally no more successful at capitalizing on the dollar's fall than petrochemical producers. The lower dollar was, however, the ticket to bigger sales for manufacturers of uranium and thorium compounds. In fact, exports of these products, which are used primarily as catalysts and reagents in medical research and diagnostic procedures, were up by such a large margin that they almost single-handedly lifted total chemical sales 14.1 percent to $1.7 billion.

West Coast petroleum refiners also discovered last year that they could no longer profit from the problems of their Japanese counterparts. Japan had developed into an expanding market for California refineries' surplus stocks of residual fuel oil in the first half of the 1980s since continuous reductions in Japanese fuel oil production had created a growing shortage of heavy fuel oil for specialized uses, particularly bunker fuel for coastal shipping. Fuel oil output dropped in 1986 as well, again in response to slow economic growth and the ongoing switch to nuclear power and liquefied natural gas for electricity generation and to coal for industrial fuel consumption. This time around, though, the cutback left supply and demand for heavy fuel oil in better balance, costing West Coast refiners most of their sales. They did pick up some business from a shortfall in light fuel oil supplies and the partial decontrol of gasoline imports, but U.S. exports of petroleum products were still off by 25.5 percent to under $0.6 billion.

Unlike other bulk suppliers, coking coal exporters never banked on any benefits from the falling dollar since there was no reason to think that market conditions in 1986 would be any better than in previous years. They were right. Japanese steel production fell last year, pulled down for the fourth time since 1980 by smaller orders from all major domestic steel users except the civil engineering sector and by reduced shipments to this country. Moreover, electric furnace operators again upped their share of output. But these twin constraints on coking coal demand were just minor causes of the U.S. industry's pessimism. The real problem was all too familiar: steel mills continued to have a glut of coking coal under long-term contract from mines in Australia and Canada, including some financed or owned in part by Japanese interests. American coal companies were once more forced to shoulder the complete adjustment. As angry as U.S. exporters were about 1986's 27.2 percent drop in sales to just $0.5 billion, they reserved their harshest criticism for the fact that purchases from the Soviet Union, China and South Africa were being increased at the same time that the American share of the imported coking coal market was being cut to only 16.7 percent -- half the level of the early 1980s.

Food and Feed - What happened to shipments of feed grains and soybeans in 1986 demonstrated that the decline in the dollar's value could be a mixed blessing, at least for exporters of these big-ticket bulk commodities. On the plus side, the weakening dollar on top of falling ingredient costs allowed Japan's formula feed industry to extend the string of price cuts that started in the April-June 1984 period through last year's four quarters. With these cuts more than offsetting another drop in the prices received by producers of eggs, milk, poultry meat and pork, demand for commercially mixed livestock and poultry feed remained on the upswing.

Backed by rising demand, particularly for beef rations and poultry feed, formula feed production expanded for the fifth straight year in 1986. In a repeat of both 1984 and 1985, however, sorghum supplied a disproportionate share of the extra volume needed to raise output. Corn usage did increase, especially in the October-December period when relative feed grain prices tilted back in favor of this ingredient. But as hard-pressed exporters had learned in 1985, greater corn consumption no longer meant more business for American suppliers. Quite the opposite, in fact, as Japanese trading companies upped their purchases of lower-priced and higher-quality Argentine and Chinese corn at the expense of U.S. shipments, which only supplied 73 percent of the feed industry's 1986 corn requirements.

That was not the end of the bad news for domestic corn exporters. After a two-year absence because of short supplies, South Africa was back in the Japanese market for corn to manufacture sweeteners, starch and other processed corn products. To make room for shipments from its preferred supplier and to accommodate arrivals from China, a new competitor in this market, the industrial corn industry slashed purchases from the United States. This one-two blow translated into another big drop in the volume of American corn shipments, but with export prices also falling in 1986, the drop had twice the impact on the trade figures -- a contraction of one-third to under $0.9 billion.

U.S. soybean exporters were no more able to capitalize on the growth in Japanese formula feed production than corn suppliers. In other years, an expansion in feed output on the order of 1986's gain would have led to at least some increase in the use of vegetable protein meal, but that relationship did not hold last year because feed grain prices were so attractive. Soybean meal was actually at a double disadvantage since rapeseed meal prices came down faster than quotes on the main protein meal ingredient in feed. Soybean meal usage consequently dipped in 1986, forcing oilseed processors to trim the crush for the second time in three years.

As it turned out, crushers should have scaled back output by a bigger margin since soybean meal stocks mounted during 1986, ending the year at twice 1985's carryover level. Why processors did not have a better handle on the crush is a mystery. Vegetable oil consumption did expand last year, but a small increase in rapeseed crushing (which yields less meal than soybean crushing) and higher imports of palm oil were more than adequate to supply this growth.

Whatever the reason, it propped up U.S. soybean exports. So, to a lesser extent, did a cutback in purchases from Brazil, which in 1985 broke this country's monopoly on providing all the soybeans crushed by the Japanese industry. American shipments were still off, but even with another drop in export prices, sales declined by a limited 10.7 percent to $0.8 billion-plus.

Capital Goods - Analysts rated the chances of an increase in 1986 capital goods exports as even at best, worried that the decline in the dollar's value was no match for the slowdown in the growth of business investment from the double-digit rates of 1984 and 1985 to a low single-digit figure. Their concerns proved unfounded as sales expanded by the biggest margin since 1983. These results were admittedly inflated by the strong performance of commercial aircraft and aircraft parts, but unlike 1985 when aerospace exports were responsible for all the increase in the capital goods number, sales of both nonelectric and electric machinery expanded last year. U.S. high technology companies in particular clearly used their improved international price competitiveness to win more of what business was generated by Japan's manufacturing sector in its attempt to cope with the fallout from the soaring yen -- whether through modernization, including automation aimed at cost reduction, diversification or the development of new product and process technologies.

Sketchy information indicates, for example, that American computer manufacturers managed to add several points to their share of the slower-growing Japanese market in 1986 even though exports of systems, peripheral equipment and parts expanded by a modest 5.2 percent to $1.4 billion. A mid-1986 survey by a Japanese trade publication placed the U.S. share of Japan's installed base at 36 percent overall and 45 percent in large mainframes, thanks in large part to the success of International Business Machines Corp.'s made-in-Japan 3090 (Sierra) series. But this survey only covers full-line American and Japanese suppliers, not specialized manufacturers like makers of engineering workstations and super minicomputers -- and these are two of the areas in which U.S. competitors made inroads in the Japanese market last year.

Manufacturers of medical equipment, electrical testing equipment and a long list of other capital goods also parlayed their technical expertise and the lower dollar into bigger exports in 1986. Higher aircraft sales provided the icing on the cake. Japanese airlines took delivery of the same number of planes last year -- 17 -- as in 1985, but a change in the product mix boosted exports 28.2 percent to almost $1.2 billion. Japan Air Lines added seven of Boeing Co.'s 747s to its fleet of 50 jumbo jets -- four for international passenger service, two for domestic routes and a freighter. It also took delivery of another three 767s for domestic use. For its part, All Nippon Airways put two more 767s into service, bringing its fleet of Boeing's latest generation of widebody medium-range planes to 23, while acquiring three 747s to facilitate the start of scheduled international service. Moreover, McDonnell Douglas Corp. delivered two additional MD-80s to Toa Domestic Airlines, the number-three Japanese carrier.

Consumer Goods - Nowhere was the marketing power of the weaker dollar more evident than in the rebound of consumer goods exports since the growth of Japanese spending on durables and nondurables, already sluggish, slowed in 1986. Expanded sales of diamonds, art works and other luxuries represented a big part of the increase, but pharmaceuticals, the mainstay of this category, also participated in the expansion. In boosting exports 9.6 percent to $0.6 billion-plus, American drug companies bucked what apparently was the fourth straight year of flat sales numbers for their Japanese competitors, which have been hard hit by a series of Ministry of Health and Welfare-mandated cuts in drug prices and fierce competition in antibiotics, the industry's biggest product line. While American pharmaceutical houses did not shy away from the fray in antibiotics, a major key to their 1986 success was the ability to capitalize on emerging growth markets, including cardiovascular drugs and diagnostic test kits.

Export Prospects

While analysts missed the mark last year in predicting that sluggish Japanese economic growth would cancel out most of the competitive benefits of the dollar's decline, this forecast could prove accurate in 1987. Any rise in the sale of industrial supplies will have to come from increased exports of the many manufactured products in this category -- an iffy development --since the prospects for bulk raw materials are uniformly glum. Similarly, the continued expansion projected for sales of meat, fish and fruits and vegetables might not be sufficient to cover another decline in the value of grain and soybean shipments. That places the burden for an overall sales gain on capital goods. While aerospace exports will remain strong, it is not clear that other U.S. high technology companies will be able to expand sales in what could shape up to be a no-growth year for Japanese capital spending.

For further information, contact Susan MacKnight.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

U.S. Exports to Japan by Commodity, 1985 and 1986

(in millions of dollars and indicated quantity units)

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Exports 1986
Total Exports			$22,630.8	$26,881.6	18.8%	12.4%
Industrial Supplies			8,679.9	8,751.5	0.8	15.2
Bituminous Coal	15,370,720 stn	11,369,424 stn	769.1	544.7	-27.9	14.4
Coking Coal	13,903,308 stn	10,478,546 stn	712.9	518.9	-27.2	19.7
Steam Coal	1,467,412 stn	890,878 stn	56.2	35.8	-36.3	2.9
Petroleum Products			762.0	567.7	-25.5	21.9
Gasoline	220,584 bbl	4,539,690 bbl	7.0	79.0	1,028.6	28.2
Jet Fuel (kerosene type)	707,637 bbl	1,396,427 bbl	22.2	33.4	50.5	22.4
Light Fuel Oils	2,534,194 bbl	5,720,741 bbl	74.8	115.4	54.3	20.3
Heavy Fuel Oils	17,423,590 bbl	9,315,609 bbl	432.6	132.1	-69.5	19.0
Lubricating Oils			24.3	27.9	14.8	4.7
Petroleum Coke (excl. calcined)	3,456,521 stn	3,440,614 stn	157.2	119.2	-24.2	24.2
Natural Gas	54,174,547 mcf	52,670,591 mcf	249.1	187.0	-24.9	99.0
Nuclear Reactor Fuels			121.5	28.7	-76.4	12.3
Logs and Lumber	2,523,343 mbf	2,958,691 mbf	884.9	1,097.4	24.0	49.0
Logs	1,899,035 mbf	2,076,718 mbf	682.2	788.9	15.6	64.3
Douglas-fir Logs	1,019,640 mbf	1,216,461 mbf	361.7	451.0	24.7	79.3
Western Hemlock Logs	679,058 mbf	621,822 mbf	209.5	198.8	-5.1	55.4
Lumber	624,308 mbf	881,973 mbf	202.7	308.5	52.2	31.2
Paper Base Stocks			470.2	563.8	19.9	24.8
Wood Chips	2,169,430 stn	2,115,988 stn	160.6	154.3	-3.9	90.8
Wood Pulp	752,901 stn	948,591 stn	277.6	359.3	29.4	21.6
Waste Paper	301,417 stn	399,064 stn	31.2	47.2	51.3	11.5
Paper and Paper Products			288.9	354.0	22.5	14.3
Newsprint	181,412 stn	194,127 stn	81.6	123.2	51.0	63.3
Kraft Linerboard	150,149 stn	166,110 stn	38.5	50.1	30.1	7.9
Coated Container Base Stock	137,127 stn	143,604 stn	97.5	102.7	5.3	49.5
Chemicals (excl. plastics, fertilizers and insecticides)			1,513.2	1,726.4	14.1	15.3
Cyclic Hydrocarbons			59.2	57.1	-3.5	10.0
Styrene	58,781 stn	43,415 stn	27.3	15.3	-44.0	6.2
Para-xylene	20,132,352 gal	28,415,688 gal	30.6	39.9	30.4	18.4
Acyclic Hydrocarbons			30.5	26.8	-12.1	10.2
Cyclic Organic Intermediate Chemical Compounds			143.2	159.9	11.7	11.7
Alcohols, Phenols and Their Derivatives			57.5	67.3	17.0	32.1
Nitrogen Function Compounds and Their Derivatives	29,154 stn	26,436 stn	36.9	31.1	-15.7	21.4
Acyclic Organic Chemical Products			350.0	346.3	-1.1	14.5
Ethylene Dichloride	328,939 stn	162,392 stn	58.8	32.0	-45.6	56.8
Acrylonitrile	85,954 stn	102,145 stn	47.6	49.7	4.4	20.7
Vinyl Acetate Monomer	60,180 stn	57,582 stn	25.2	22.3	-11.5	17.9
Uranium and Thorium Compounds	776 stn	798 stn	437.5	600.2	37.2	56.7
Sodium Compounds			51.1	53.4	4.5	8.1
Soda Ash	226,759 stn	235,465 stn	22.5	26.6	18.2	11.5
Pigments			29.7	29.7	0.0	12.3
Color Lakes and Toners, Dyes and Paints			35.6	40.5	13.8	8.2
Antiknock Compounds and Additives for Lubricating Oils			67.5	58.6	-13.2	8.2
Laboratory Reagent Preparations			21.6	31.7	46.8	18.6
Fertilizers and Fertilizer Materials			n.a.	99.1	n.a.	5.1
Unmixed Pesticides			66.1	80.6	21.9	10.6
Manufactured Pesticides			60.0	66.7	11.2	10.0
Plastic and Synthetic Resin Compounds			305.6	322.0	5.4	8.1
Film, Strips and Sheets			47.0	54.5	16.0	8.3
Synthetic Rubber			51.0	65.8	29.0	10.1

Commodity	Quantity		Value		Percent Change	Japan's Share of U.S. Exports
	1985	1986	1985	1986	1985/86	1986
Tall Oil	65,698 stn	51,166 stn	$34.3	$15.9	-53.6%	62.2%
Photographic Chemicals			31.9	24.6	-22.9	14.4
Still X-Ray Film	54,044,378 sft	63,066,347 sft	35.6	49.6	39.3	35.7
Graphic Arts Film	62,849,597 sft	69,118,972 sft	23.3	31.0	33.0	24.5
Still Photographic Film (excl. film packaged for retail sale)	23,018,655 sft	24,933,414 sft	26.8	41.6	55.2	16.4
Photosensitive Papers			26.7	33.3	24.7	11.3
Steel Scrap	2,110,087 stn	1,725,068 stn	199.1	170.0	-14.6	16.1
Nonferrous Ores and Scrap			459.6	491.8	7.0	31.9
Copper Ore	113,354 stn	145,104 stn	108.9	141.3	29.8	75.2
Molybdenum Ore	3,515 stn	2,909 stn	26.2	16.6	-36.6	12.2
Copper Scrap	42,155 stn	42,154 stn	42.8	43.7	2.1	15.7
Aluminum Scrap	290,591 stn	264,115 stn	243.7	223.8	-8.2	68.2
Platinum and Platinum Group Metals	185,665 toz	108,312 toz	62.7	29.9	-52.3	30.4
Aluminum and Aluminum Alloys			257.7	188.4	-26.9	23.1
Aluminum Ingot	218,620 stn	144,849 stn	239.2	161.7	-32.4	57.2
Unwrought Magnesium	11,149 stn	9,926 stn	28.6	25.8	-9.8	24.1
Gold	84,667 toz	569,906 toz	25.7	243.9	849.0	13.9
Iron and Steel (incl. ferroalloys)			48.4	51.7	6.8	4.8
Silicon			30.4	33.2	9.2	51.0
Unmanufactured Nonmetallic Minerals			104.8	111.5	6.4	14.5
Kaolin Clay	437,244 stn	455,408 stn	60.2	65.3	8.5	30.6
Other Clays			28.1	27.2	-3.2	19.7
Manufactured Mineral Supplies			111.1	128.0	15.2	9.4
Glass (excl. automotive and mirror glass)			30.7	36.0	17.3	7.3
Industrial Textile Fibers, Yarns and Fabrics			69.3	74.1	6.9	2.9
Synthetic Fibers and Manmade-Fiber Yarns			37.6	42.1	12.0	3.8
Raw Cotton	1,065,454 rba	784,735 rba	368.0	238.6	-35.2	30.9
Hides and Skins			298.2	331.4	11.1	25.2
Whole Cattle Hides	6,824,464 pc	6,624,385 pc	276.1	302.2	9.4	25.2
Leaf Tobacco	51,002 stn	40,736 stn	302.4	227.1	-24.9	18.8
Stemmed Flue-Cured Leaf	31,897 stn	22,192 stn	211.3	148.4	-29.8	23.2
Stemmed Burley Leaf	11,266 stn	12,681 stn	83.2	74.5	-10.5	27.8
Capital Goods			5,938.6	6,727.5	13.3	6.8
Nonelectric Machinery			3,384.7	3,561.7	5.2	7.9
Data Processing Equipment			1,331.1	1,400.6	5.2	9.2
Computers			383.2	404.2	5.5	11.6
Peripheral Equipment and Parts			866.7	897.1	3.5	8.1
Disk and Tape Storage Units			74.4	104.1	39.9	8.3
Terminals			35.6	40.5	13.8	4.8
Printers			33.0	24.5	-25.8	5.7
Parts			585.3	592.7	1.3	8.3
Magnetic Computer Disks and Tapes			38.8	67.1	72.9	15.4
Semiconductor Production and Assembly Equipment and Parts			276.4	155.8	-43.6	19.0
Measuring, Testing and Controlling Instruments and Parts			553.2	581.1	5.0	11.9
Industrial Process-Type Instruments and Parts			45.9	40.4	-12.0	5.7
Chemical Analysis Equipment and Parts			59.7	56.3	-5.7	10.6
Physical Analysis Equipment and Parts			50.5	52.7	4.4	11.5
Equipment for Testing Electrical, Radio and Communications Circuits and Parts			216.5	258.0	19.2	19.0
Waveform Measuring and/or Analyzing Apparatus and Parts			39.7	42.3	6.5	16.0
Instruments for Measuring or Testing Combinations of Electrical Characteristics and Parts			95.9	132.4	38.1	26.2

Commodity	Quantity		Value		Percent Change	Japan's Share of U.S. Exports
	1985	1986	1985	1986	1985/86	1986
Instruments for Measuring or Checking Electrical Quantities and Parts			$32.4	$25.5	-21.3%	12.1%
Scientific, Professional and Medical Equipment			265.5	337.0	26.9	13.5
Electromedical and Electrotherapeutic Apparatus and Parts (excl. X-ray apparatus)			117.5	149.9	27.6	14.3
Medical Equipment Based on X-Rays and Parts			35.0	43.8	25.1	18.1
Other Medical, Dental and Surgical Instruments and Parts			91.6	116.8	27.5	12.5
Bougies, Catheters, Drains and Sondes and Parts			28.9	38.6	33.6	18.6
Power Generating Equipment (excl. aircraft and automotive engines)			73.3	77.1	5.2	4.2
Nonfarm Tractors, Parts and Attachments			52.4	63.4	21.0	4.5
Parts of Tracklaying Tractors			29.8	39.3	31.9	4.5
Excavating and Paving Machinery and Parts			34.2	33.5	-2.0	2.4
Drilling and Oilfield Equipment			68.9	62.3	-9.6	2.5
Parts and Accessories for Oilfield and Gasfield Drilling Equipment			63.1	55.7	-11.7	2.7
Machinery and Parts for Making or Finishing Pulp, Paper and Paperboard			27.8	28.9	4.0	11.0
Machine Tools and Parts			59.8	83.3	39.3	9.4
Parts			25.2	31.5	25.0	9.9
Commercial and Industrial Heating and Cooling Equipment and Parts			42.0	42.9	2.1	6.6
Pumps and Compressors			49.1	51.6	5.1	3.9
Filtering and Purifying Machinery and Parts			37.0	44.7	20.8	11.0
Taps, Cocks, Valves and Similar Devices and Parts			35.5	37.1	4.5	6.1
Equipment for Service Industries			120.1	143.7	19.7	7.0
Electric Machinery			804.3	977.5	21.5	6.6
Semiconductors			235.1	294.3	25.2	6.0
Integrated Circuits			130.6	144.6	10.7	12.6
Linear Integrated Circuits			33.6	28.6	-14.9	13.5
Chips, Dice and Wafers			75.7	107.0	41.3	4.0
Telephone Equipment and Parts			38.9	72.3	85.9	10.1
Radar Apparatus (excl. for planes and boats) and Parts			70.8	92.2	30.2	16.4
Parts			67.7	84.9	25.4	19.3
Generators, Transformers and Accessories			75.9	73.7	-2.9	5.0
Switches and Relays			27.5	30.4	10.5	8.8
Connectors			46.8	45.1	-3.6	11.4
Transportation Equipment			1,749.6	2,188.3	25.1	5.7
Civilian Aircraft			905.9	1,161.3	28.2	15.8
Passenger, Cargo and Combination Jet Transports	17 ut	17 ut	886.4	1,130.3	27.5	18.0
Civilian Aircraft Engines, Parts and Accessories			552.1	659.6	19.5	8.8
Jet Turbines			50.3	37.9	-24.7	4.0
Jet Engine Parts			185.0	230.3	24.5	12.2
Parts for Civilian Aircraft			270.2	340.4	26.0	8.9
New Cars	1,376 ut	2,759 ut	18.8	42.4	125.5	0.7
Automotive Parts, Engines and Bodies			214.8	235.0	9.4	1.8
Engines and Parts			32.1	24.7	-23.1	1.1
Transmissions			25.6	19.1	-25.4	1.8
Food and Feed			5,000.7	5,042.8	0.8	22.7
Corn (excl. seed and popcorn)	432,179,039 bu	361,006,823 bu	1,292.6	866.0	-33.0	33.3
Sorghum (excl. seed)	95,506,830 bu	84,437,152 bu	240.9	177.3	-26.4	48.9
Soybeans (excl. seed)	157,900,636 bu	151,441,602 bu	937.0	837.2	-10.7	19.4
Animal Feeds			161.2	232.7	44.4	8.9
Dried Beet Pulp	359,546 stn	454,878 stn	43.9	55.1	25.5	74.3
Hay and Straw	175,374 stn	333,623 stn	23.3	45.0	93.1	90.8
Alfalfa Hay Cubes	441,397 stn	597,935 stn	56.8	77.5	36.4	93.2
Wheat	114,652,413 bu	118,472,413 bu	469.0	424.3	-9.5	14.4

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Exports 1986
Fruits and Vegetables			$452.1	$584.0	29.2%	22.0%
Lemons	120,988 stn	135,352 stn	77.2	83.0	7.5	87.9
Grapefruit	118,701 stn	172,178 stn	51.5	74.1	43.9	55.5
Oranges and Tangerines	119,097 stn	123,622 stn	73.3	68.5	-6.5	29.4
Fresh Non-Citrus Fruit			33.7	50.1	48.7	13.1
Fruit and Vegetable Juices			31.6	28.6	-9.5	18.6
Almonds			45.3	89.7	98.0	21.3
Frozen Vegetables			61.0	84.2	38.0	68.0
Frozen French Fried Potatoes	52,859 stn	72,409 stn	33.8	45.0	33.1	82.9
Meat and Meat Products			540.8	760.9	40.7	53.4
Fresh and Frozen Beef	91,012 stn	122,334 stn	340.6	470.7	38.2	77.7
Fresh and Frozen Beef Offals	40,133 stn	53,029 stn	76.1	119.4	56.9	41.6
Fresh and Frozen Pork	10,118 stn	13,176 stn	32.7	52.3	59.9	74.0
Fresh and Frozen Poultry	51,158 stn	85,323 stn	57.3	91.2	59.2	31.2
Eggs (not in the shell)	11,999 stn	24,922 stn	17.3	34.6	100.0	83.5
Fish and Fish Products			685.4	864.2	26.1	66.7
Fresh and Frozen Whole Salmon	113,657 stn	108,482 stn	384.9	445.6	15.8	81.6
Fresh and Frozen Whole Herring	37,245 stn	31,907 stn	54.7	46.8	-14.4	70.8
Fish Roe	14,042 stn	13,753 stn	99.5	87.6	-12.0	84.6
Frozen Snow Crab	9,691 stn	12,091 stn	33.1	62.3	88.2	84.7
Consumer Goods			1,415.5	1,689.9	19.4	12.0
Pharmaceuticals			590.5	647.4	9.6	19.9
Bulk Antibiotics			167.7	196.4	17.1	25.5
Bulk Cardiovascular Drugs			15.1	51.1	238.4	19.0
Packaged Vitamins			39.2	20.0	-49.0	24.3
Diagnostic Reagents			17.6	30.6	73.9	17.0
Blood and Blood Derivatives			161.5	170.2	5.4	37.0
Cigarettes	322,756,950 pk	481,915,900 pk	94.9	128.0	34.9	9.9
Electric Household Appliances (incl. air conditioners)			43.5	41.1	-5.5	4.1
Stainless Steel Cooking and Kitchenware			39.0	27.1	-30.5	66.8
Records and Consumer Electronics			34.0	31.3	-7.9	6.7
Toys and Sporting Goods			85.7	108.9	27.1	13.0
Golf Equipment			36.1	39.2	8.6	36.6
Still Film in Cartridges and Rolls	39,890,112 ut	28,535,398 ut	57.4	47.2	-17.8	31.5
Nonwoven Fabrics of Manmade Fibers			30.6	35.0	14.4	21.9
Clothing			33.7	45.8	35.9	5.1
Footwear			34.2	36.4	6.4	27.6
Gem Diamonds and Other Gem Stones			50.3	96.3	91.5	16.5
Jewelry			18.1	33.6	85.6	14.8
Works of Art			34.8	64.3	84.8	18.9
Printed Material			59.7	63.5	6.4	4.7
Miscellaneous			1,595.9	4,669.9	192.6	18.8
Military-Type Goods			439.0	261.8	-40.4	6.0
Other Domestic Exports			568.2	679.1	19.5	7.1
Military Aircraft Engine Parts			334.2	388.3	16.2	14.9
Re-exports			588.8	3,729.0	533.3	34.1
Bullion	0 toz	6,755,228 toz	0.0	3,095.5	--	84.2

Key to quantity abbreviations:

bbl = barrels	mbf = thousand board feet	pk = packs	stn = short tons
bu = bushels	mcf = thousand cubic feet	rba = running bales	toz = troy ounces
gal = gallons	pc = pieces	sft = square feet	ut = units

Source: U.S. Department of Commerce, U.S. Exports: Schedule E Commodity by Country (FT 410), December 1985 and December 1986.

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REPORT

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IN THIS ISSUE:

Fiscal Policy At A Turning Point? 1

Tokyo Expands Aid Initiative 3

Japan Still The World's Top Net Creditor Nation 4

JDA Director General Visits China 6

Trade Concerns Spill Over Into Defense Debate .. 7

Collision Course Over Kansai? 8

Notes: IC Patent Infringement; EC Tariffs; Space Station 10

Fiscal Policy At A Turning Point?

Responding to a slowdown in domestic growth and international pressure for a policy change, Japan's cabinet approved a major fiscal stimulus package on May 29. After several years of spending austerity aimed at reducing the public debt, the decision could represent a significant shift in policy. Two aspects of the proposal augur well for its acceptance by the Diet when an extraordinary session is convened in late summer: the controversial value-added tax proposal will not be included and popular income-tax cuts will be retained. The package, plus the June 2 decision to spend 80.1 percent of the public works funds already appropriated in the FY 1987 budget, should go a long way toward helping the economy achieve the 3.5 percent inflation-adjusted growth rate forecast for this fiscal year.

Japan Still The World's Top Net Creditor Nation

The Ministry of Finance reported last week that Japan's net foreign assets surged to a record $180.4 billion at the end of 1986, making it the world's largest creditor nation for the second consecutive year. Net overseas assets increased 39 percent from the $129.8 billion recorded at the end of 1985 (see Table 1), reflecting the investment abroad of its huge trade surpluses.

Table 1: Japan's Net External Assets

(in millions of dollars)

End of Year	Private Sector	Government Sector	Total
1978	-$2,550	$38,764	$36,214
1979	850	27,927	28,777
1980	-16,659	28,193	11,534
1981	-18,537	29,455	10,918
1982	2,046	22,636	24,682
1983	11,928	25,331	37,259
1984	47,069	27,277	74,346
1985	104,450	25,371	129,821
1986	138,541	41,810	180,351

Source: Bank of Japan and Nihon Keizai Shimbun, May 26, 1987.

The current situation contrasts sharply with 1981, when the United States was the leading creditor nation and Japan's private sector had net liabilities of more than $18 billion. Three consecutive years of current account deficits in excess of $100 billion, though, have made this country the world's largest debtor nation. Although figures for 1986 are not yet available, it is estimated that U.S. net foreign liabilities increased to about $220 billion.

Japan's external assets increased 66.2 percent to $727.3 billion last year, while liabilities rose 77.7 percent to $547 billion (see Table 2). A sharp rise in the private sector's short-term borrowing accounted for most of the increase in liabilities. According to some analysts, Japanese banks have been borrowing short-term funds from abroad to help finance long-term investments overseas.

Japanese holdings of foreign securities, which rose 77 percent to $257.9 billion last year, now account for more than one-third of gross foreign assets. According to Brown Brothers Harriman & Co., dollar bonds accounted for more than 80 percent of total foreign bond purchases by Japanese investors in 1986. The large purchases of foreign securities have been encouraged by financial liberalization measures, intended in part to slow the appreciation of the yen. Prior to April 1986, for example, trust banks and life insurance companies, which are major purchasers of foreign securities, were only allowed to invest a maximum of 10 percent of their total funds in foreign assets. That ceiling is now 30 percent. Continued financial liberalization is likely to further spur investment abroad. On May 27, for example, the Diet passed legislation allowing the Ministry of Posts and Telecommunications to raise the percentage of foreign assets in its Y31.8 trillion ($227.3 billion at Y140=$1.00) postal pension and insurance fund from 10 percent to 20 percent.

Table 2: Japan's External Assets and Liabilities

(in millions of dollars)

	Assets		Liabilities	
	End of 1985	End of 1986	End of 1985	End of 1986
Long-term	$301,297	$476,136	$122,328	$192,336
Private sector	264,458	424,704	91,776	152,192
Direct investment	43,974	58,071	4,743	6,514
Trade credits	23,603	31,992	131	33
Loans	46,870	69,211	1,211	1,199
Securities	145,748	257,933	84,847	143,611
Others	4,263	7,497	844	835
Government sector	36,839	51,432	30,552	40,144
Trade credits	1,062	1,423	0	0
Loans	23,293	33,558	84	66
Others	12,484	16,451	30,468	40,078
Short-term	136,404	251,170	185,552	354,619
Private sector	108,753	207,876	176,985	341,847
Monetary movements	99,719	194,713	160,984	322,163
Others	9,034	13,163	16,001	19,684
Government sector	27,651	43,294	8,567	12,772
Monetary movements	27,650	43,294	4,557	7,103
Others	1	0	4,010	5,669
Total	437,701	727,306	307,880	546,955

Source: Nihon Keizai Shimbun, May 27, 1987.

Direct foreign investment assets also rose sharply, hitting $58.1 billion at the end of 1986. The increase reflects stepped-up efforts by Japanese industries to shift production to other countries in an attempt to cushion the impact of the high yen. According to a MOF report, direct foreign investment hit a record $22.3 billion in FY 1986 (April 1, 1986-March 31, 1987) compared to $12.2 billion the preceding fiscal year. Much of the increase was due to a sharp rise in real estate investments in the United States, which soared from $1.1 billion in FY 1985 to $3.7 billion in fiscal 1986.

Japan's position as the leading creditor nation is reflected in its declining deficit in services (see Table 3). In the early 1980s, Japan's service deficit nearly matched its surplus in merchandise trade. The swing in net investment income from a net outflow in 1981 to a $9.5 billion inflow last year, though, reduced the deficit on trade in services to under $5 billion.

Table 3: Japan's Trade Balance in Services

(in millions of dollars)

Year	Investment Income Total	Investment Income Direct	Other Services	Total
1978	$900	$376	-$8,287	-$7,387
1979	2,011	345	-11,483	-9,472
1980	854	809	-12,197	-11,343
1981	-763	816	-12,810	-13,573
1982	1,718	992	-11,566	-9,848
1983	3,082	1,354	-12,188	-9,106
1984	4,231	1,428	-11,978	-7,747
1985	6,840	1,711	-12,005	-5,165
1986	9,473	1,412	-14,405	-4,932

Source: Bank of Japan

Randall S. Jones

JDA Director General Visits China

Yuko Kurihara last week became the first head of the Japan Defense Agency to visit the People's Republic of China, another indication of efforts to forge sound across-the-board relations despite continued friction over trade matters. While the talks were significant in terms of defense, they were more important in outlining the overall relationship between the two countries.

China has been critical of Tokyo's defense policies and indeed of any policy that Peking perceives as a reminder of Japan's legacy of the 1930s. The PRC launched intense protests when Japanese textbooks softened their treatment of the invasion of China. A senior Chinese defense official cancelled a scheduled visit to Japan in 1985 to protest visits by Japanese government officials to the Yasukuni Shrine, which is dedicated to the memory of military figures. And Tokyo's recent decision to lift its limit on total defense spending precipitated additional outcries from China's leadership.

Economic frictions have complicated the picture as well. Bilateral trade overwhelmingly favors Japan, and there is no prospect for significant changes in the near future. Furthermore, China has been very critical of Japanese investment policies, insisting that overall amounts are insufficient and charging that firms refuse to provide more advanced technologies that are essential to economic development. Political tensions have also surfaced in recent weeks after the government expelled a Japanese reporter on espionage charges.

Mr. Kurihara used the occasion to ease any fears of revived Japanese militarism. In statement after statement, he insisted that Japan's defense program is intended solely to defend the country and said that the gradual buildup would not mean unrestrained spending in the future. The Japanese

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THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS

Summary

There is increasing frustration with the apparent inability of the General Agreement on Tariffs and Trade to stem the rising tide of protectionism and resolve trade disputes. Trade in major products, such as cars and steel, is increasingly restricted by bilateral agreements that violate GATT principles. The GATT secretariat has identified 94 recent voluntary export restraint or market-sharing arrangements that are inconsistent with the organization's rules. Although GATT's 93 member-countries account for more than 80 percent of world trade, only 20 percent of total trade is conducted under GATT rules, according to one study.

The Uruguay Round, launched in September 1986, offers an important opportunity to improve the world trading system. The 15 topics for negotiation include measures to make the GATT more effective, particularly in its ability to settle disputes. The most contentious issues are likely to be trade in agricultural products and the extension of GATT coverage to services. The developing countries, particularly the newly industrialized countries of Asia, are likely to play a more important role in the new round, reflecting their growing share of trade in manufactured goods.

Launching the Uruguay Round

The major incentive for the new round of multilateral trade negotiations is the prospect of obtaining the growth-promoting benefits of increased trade by lowering trade barriers. Although the value of world merchandise trade increased 10 percent last year to top the $2 trillion mark for the first time (see Table 1), this largely reflects the decline in the dollar that boosted the value of other countries' exports. The increase was much less in volume terms. Trade in manufactured goods rose 3 percent, "one of the poorest performances in three decades," according to GATT, while the volume of agricultural trade increased only 1 percent. In contrast, trade in fuels and mining products rose 7 percent, boosted by a sharp decline in petroleum prices.

Table 1: World Exports, 1950-84

(in billions of dollars)

Year	Developed Countries	Developing Areas	Eastern Trading Areas*	Total
1963	$100	$33	$18	$155
1968	160	46	26	238
1973	401	103	57	574
1975	568	194	92	875
1980	1,354	463	172	1,989
1981	1,285	507	171	1,963
1982	1,197	476	171	1,844
1983	1,187	442	180	1,808
1984	1,284	436	187	1,907
1985	1,275	441	206	1,922
1986	1,480	400	230	2,110

*Eastern Europe, the USSR, China and other centrally planned economies in Asia.

Source: General Agreement on Tariffs and Trade, International Trade 1985/86.

On September 20, 1986 representatives from 74 countries met at the annual GATT ministerial meeting in Punta del Este, Uruguay and agreed to launch the new round. The ministerial declaration called for negotiations on 14 topics to "halt and reverse protectionism," and agreed to begin talks on services trade on a separate track from trade in goods. The communique also included standstill and rollback commitments on trade restrictions under which governments pledged not to take any trade restrictive measures that were inconsistent with GATT principles, and agreed to phase out existing breaches of GATT rules.

In January 1987 trade officials from member countries agreed to a timetable and program for the new round. Fifteen negotiating groups have been established to outline the issues so that actual bargaining can begin in 1988. The talks are slated to last four years, although early agreements may be possible in some areas. The negotiating topics can be divided into four

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categories: measures to strengthen the role of GATT; revisions of existing agreements; issues of concern to developing countries; and the extension of GATT coverage to new areas.

Measures to Strengthen the Role of GATT

One of the negotiating committees will consider possible changes in existing GATT articles and provisions. A second committee on the functioning of the GATT system will consider proposals to enhance the surveillance of national trade policies as a means of insuring compliance with trading rules. In light of the connection between finance and trade, it will also examine ways to strengthen the links between GATT and the International Monetary Fund and the World Bank.

GATT's inability to resolve disputes, one of the organization's most glaring weaknesses, is a major issue. For instance, in 1982 the United States complained that the European Community unfairly restricted imports of U.S. oranges and lemons. A GATT panel ruled in favor of this country in 1985, but the EC ignored the ruling and blocked the report's adoption. The issue was finally resolved in bilateral talks between the United States and the EC in September 1986.

This incident is typical of the dispute-settlement procedure since GATT does not have sufficient authority to impose a solution. The difficulty of interpreting vague rules also complicates the resolution of disputes. Under the dispute-settlement procedure of Article 23, any member country can file a complaint alleging a violation of GATT rules. If bilateral negotiations fail to produce an agreement, a panel of experts is then established to judge the case. Since the member countries decide by consensus whether to accept the report, the alleged violator has the power to veto any recommendation -- a procedure that has been compared to having a policeman without a jail.

GATT's inability to enforce recommendations has encouraged countries to settle problems outside the system -- settlements that are often GATT-illegal, trade restrictive and damaging to third-country interests. U.S. Trade Representative Clayton Yeutter argues that GATT will "ultimately fade into oblivion" unless it can settle trade disputes more effectively and swiftly. Washington favors a "binding arbitration" approach. If the offending country failed to abide by the ruling, it would at least have to provide compensation.

It is unlikely, however, that the implementation of tougher rules will substantially improve the dispute-settlement process. GATT is limited by the level of political commitment that governments choose to invest in it. Many countries continue to prefer bilateral negotiations to solve trade problems, implying that the issues are too important to be left to the GATT. Until countries develop the political will to submit to GATT discipline, the dispute-settlement process will continue to be ineffective.

Revision of Existing Agreements

One of the 15 committees in the new round will attempt to improve, clarify and expand the agreements on nontariff barriers reached in the Tokyo Round (1973-79). Seven codes cover government procurement, standards, customs valuation, import licensing, dumping, domestic and export subsidies and civil aircraft. Negotiations on the government procurement code, which is aimed at preventing central governments from discriminating against foreign goods, led to an agreement last November on an expanded code.

The reduction or elimination of tariffs will be discussed by another negotiating group. Although tariff levels have been greatly reduced, they remain a significant barrier to trade in some important products. U.S. objectives in this area include reducing tariffs on products such as chemicals and furniture, as well as a reduction in the high import levies that prevail in many developing countries.

Also on the agenda is the issue of subsidies and countervailing duties. When a production or export subsidy leads to the injury of an industry in the importing country, the government has the right to impose countervailing duties to offset the economic effect of the subsidy. The committee will seek to improve the subsidies code negotiated during the Tokyo Round that governs the use of both subsidies and countervailing duties.

The negotiating committee on nontariff measures will seek to reduce or eliminate nontariff barriers to trade, including quantitative restrictions. Although GATT Article 11 prohibits the use of quotas except for agricultural commodities in certain situations, it is often violated. Domestic producers prefer the greater certainty of quotas, which better insulate them from market forces. Tariffs, however, permit goods to be imported from the cheapest source and also provide the government with revenue. Under quotas, in contrast, foreign producers receive monopoly profits (unless the quota rights are auctioned), creating incentives for the perpetuation of the quotas.

Safeguards remain a major unresolved issue. Article 19 of the GATT allows temporary safeguards to protect industries that are found to be seriously injured by imports. The rules require prior notification and the affected countries can retaliate in response if they are not provided compensation. In addition, Article 19 is generally interpreted to mean that the restrictions should be temporary and applied in a nondiscriminatory fashion against the supplying countries. One recent example was Washington's 1983 imposition of quotas and higher tariffs on specialty steel under Section 201 of the Trade Act of 1974. The European Community retaliated by restricting imports of sports equipment and some chemical products from this country.

The rapid shift of comparative advantage among countries and the excess capacity that exists in many industries has resulted in intense pressure to restrict imports. Article 19 has gradually fallen into disuse as countries have increasingly relied on bilateral measures, such as voluntary restraint agreements and orderly marketing agreements, to protect domestic industries. The EC, for example, has negotiated 15 bilateral agreements restricting steel imports since 1978; the United States has signed 18 such accords since 1984. These pacts violate the principle of non-discriminatory behavior by allowing selective protectionism. A significant number of bilateral agreements initiated in recent years restrict imports from Japan and the newly industrialized countries in Asia (Korea, Taiwan, Hong Kong and Singapore). According to a study by the Organization for Economic Cooperation and Development, the value of manufactured exports from Japan and the NICs subject to trade restrictions by OECD countries increased from $14.9 billion in 1980 to $31.7 billion in 1983.[1]

The increased use of these "grey area" measures is a major cause of the decline in GATT's prestige and effectiveness. There are two basic reasons for the virtual breakdown of the safeguard system. First, the stringent requirements of Article 19 make it unattractive. Using grey area measures, a country has no obligation to prove that imports have caused serious injury. Moreover, it can single out countries for restraints and does not have to provide compensation. Second, measures consistent with GATT rules are unlikely to resolve the difficulties of declining industries affected by falling demand or a shift in comparative advantage to other producers.

Although grey area measures may be no more severe than safeguard actions, they are potentially more troublesome for several reasons. Bilateral restraints generally penalize the most efficient producer and new market entrants, often developing countries. Furthermore, these restraints are easier to initiate and maintain since the affected countries have no recourse. It is important, therefore, that GATT principles be applied to temporary import restraints to provide fairness and discipline.

A successful safeguards code would require members to sacrifice some of their economic sovereignty by allowing GATT more control over politically sensitive issues. A code should include both incentives and sanctions to persuade countries to adhere to GATT principles in taking future safeguard actions. It would be useful if the GATT secretariat had a role in designing and monitoring import restraint programs, similar to the IMF's role in debt negotiations. Statistical standards should be established to determine whether the injury is serious enough to justify restraints. Import restrictions should take the form of tariffs that decline over time. Since in most cases the injured industry has lost international competitiveness, the restraint program should foster contraction rather than revival. Moreover, it should not commit public funds to the industry or mandate private investment in that field.

The failure to negotiate a safeguards code was one of the major failures of the Tokyo Round. The question of whether to allow safeguard actions to be imposed on targeted countries rather than on a nondiscriminatory basis prevented agreement. The EC's position is that countries should be able to target those nations causing the injury, while not restricting imports from traditional suppliers. Developing countries, which fear that selective measures would discriminate against them, do not concur. A new code should prohibit selectivity because it lowers the cost of safeguard action and makes protection too easy.

Issues of Concern to Developing Countries

GATT has long been dominated by the problems and interests of the United States, Western Europe and Japan. Developing countries are presently accorded "special and differential" treatment under Part 4 of the GATT through preferences and easier access to exemptions, and are not required to make reciprocal concessions in negotiations. Actually, this special treatment is of limited value since GATT has neglected many important issues of concern to the third world. Since the developing countries were not required to grant reciprocal concessions to the industrialized countries, they received little in return.

In the Uruguay Round the developing countries will be expected "to participate more fully in the framework of rights and obligations under the

General Agreement," according to the Punta del Este declaration. Many countries argue that the LDCs should accept more of the responsibilities of membership commensurate with their increased share of world trade. Several developing countries, such as Taiwan and South Korea, have become major exporting nations (see Table 2). As a group, the third world's share of world trade in manufactures rose from 6.9 percent in 1973 to 12.4 percent in 1985 (see Table 3). Since some have reached a level of income that no longer warrants special treatment, the question of when developing countries should "graduate" from special trade preference should be addressed. By 1986, for example, South Korea's gross domestic product per capita had overtaken Turkey and was gaining fast on Portugal.

Table 2: The 20 Leading Exporting Nations, 1973 and 1985

Country	Share of World Exports 1973	Share of World Exports 1985	1973 Rank
United States	12.5%	10.7%	1
West Germany	11.8	9.6	2
Japan	6.4	9.1	3
United Kingdom	5.2	5.3	5
France	6.3	5.1	4
Soviet Union	3.7	4.5	10
Canada	4.4	4.5	6
Italy	3.9	4.1	9
Netherlands	4.2	3.6	7
Belgium-Luxembourg	3.9	2.8	8
Taiwan	0.8	1.6	27
Sweden	2.1	1.6	11
Hong Kong	0.9	1.6	24
South Korea	0.6	1.6	39
China	1.0	1.4	20
Switzerland	1.7	1.4	12
Saudi Arabia	1.6	1.4	14
Brazil	1.1	1.3	17
East Germany	1.3	1.3	16
Spain	0.9	1.3	23

Source: General Agreement on Tariffs and Trade

The question of tariff escalation (see Table 4), which limits the development of processing industries in raw material-supplying (mainly less developed) countries and encourages them to remain "hewers of wood and drawers of water," will be discussed by the negotiating committees on tropical products and natural resource-based products. While tropical products, such as coffee, tea, cocoa, tropical wood and rubber, do not represent a large share of world trade, many developing countries rely heavily on them for export earnings. LDCs want lower barriers to these products, both in their processed and unprocessed forms. A reduction of trade barriers to natural resource-based products will promote industrial development in many third world countries.

Table 3: Ten Leading LDC Exporters of Manufactured Goods

(in billions of dollars)

Country	Value 1973	Value 1985*	Share of World Total 1973	Share of World Total 1985*
Taiwan	$3.7	$27.8	1.1%	2.3%
South Korea	2.7	27.7	0.8	2.3
Hong Kong	4.7	27.3	1.4	2.3
Brazil	1.2	15.5	0.3	1.3
Singapore	1.6	11.7	0.5	1.0
India	1.6	4.8	0.5	0.4
Malaysia	0.3	3.9	0.1	0.3
Thailand	0.2	2.4	0.1	0.2
Argentina	0.7	1.4	0.2	0.1
Philippines	0.2	1.2	0.1	0.1
LDC Total	24.0	149.0	6.9	12.4

*Preliminary estimates.

Source: General Agreement on Tariffs and Trade

Table 4: Average Tariff Levels in Major OECD Countries, 1983

	United States	Japan	Canada	European Community
Finished Manufactures	6.9%	6.4%	8.1%	7.0%
Semifinished Manufactures	6.1	6.3	6.6	6.2
Raw Materials	1.8	1.4	2.6	1.6

Source: G.C. Hufbauer and J.J. Schott, Trading For Growth: The Next Round of Trade Negotiations (Washington, D.C.: Institute for International Economics, 1985), p. 77.

Another category of particular concern to the developing world is trade in textiles and apparel, an area largely exempt from GATT rules. Quantitative restrictions have been imposed on cotton textiles since 1961. The Multi-Fiber Arrangement, first negotiated in 1974, was renewed for five years in August 1986 and serves as the framework for bilateral restraint agreements among 50 nations covering products made from cotton, wool, synthetics and all natural fibers except pure silk. Although developed countries generally do not apply quotas against each other, the MFA is a costly policy; one study estimates that it raises clothing prices in Great Britain by 20 to 50 percent. The World Bank estimated that in 1980 the cost of each job saved in the American and European clothing industries by protectionist measures was $169,600 and $124,700, respectively.[2] At the same time, trade restrictions have failed to prevent a decline in employment in the textile and clothing industries in the developing countries (see Table 5).

Table 5: Change in Employment in Textiles and Clothing, 1973-84

(percentage change over period)

	Textiles	Clothing
United States	-22%	-18%
Canada	-25	-20
European Community	-46	-43
Austria	-43	-27
Sweden	-41	-56
Switzerland	-37	-51

Source: General Agreement on Tariffs and Trade

Although some smaller producers enjoy the security of quotas under the MFA, many developing countries have called for freer trade in textiles and apparel, which account for about one-fourth of their manufactured exports. Despite the renewal of the MFA, one committee will consider textile-apparel trade. While the ultimate goal should be free trade, it is politically impossible and would entail severe dislocations after so many years of protection. A more viable solution is to return textiles and apparel to GATT rules through a gradual phaseout of the MFA during the next 10 years. A compromise on textiles and apparel may help integrate the developing countries into the mainstream of GATT.

Another concern to the developing countries is the question of intellectual property rights. The United States believes an agreement is crucial to protect U.S. technology in such areas as computer software and semiconductors. Counterfeit goods make up an estimated $60 billion in annual world trade. Washington is hoping for a code to provide effective protection for intellectual property rights, including patents, copyrights and trademarks, within the GATT framework. As a first step, negotiators are seeking early approval of an agreement to stop trade in counterfeit goods. Border controls alone are insufficient since a growing share of intellectual property is transmitted via telephone or satellite. Washington contends that a code protecting these rights would benefit developing countries by encouraging technology transfers and direct investment. The negotiations, however, have been slowed by the strong objections of the developing countries and a reluctance to proceed without them. In addition to the obvious pecuniary motives for opposing such an agreement, some LDCs fear that it will be used to restrict imports of legitimate products. Moreover, they would rather have the issue dealt with by the World Intellectual Property Organization.

Extension of GATT to New Areas

Services - The GATT framework has been limited largely to manufactured goods, while services such as banking, tourism, data processing, construction and engineering have been excluded. As a result, many service industries face import barriers more restrictive than those applied to manufactures. Despite these constraints, technological advances and the liberalization of capital markets has helped boost global trade in services to an estimated $400-$500 billion annually, approximately one-fifth of total world trade. Services account for a significant share of exports in many nations, including the LDCs (see Table 6).

Table 6: Exports of Goods and Services

(annual growth between 1973 and 1984*)

Country	Goods	Services	Share of Services**
United States	10.8%	12.5%	35%
West Germany	8.8	9.9	21
Japan	15.0	15.7	20
United Kingdom	11.2	8.5	34
France	9.0	14.7	37
Canada	11.7	10.1	13
Italy	11.5	9.3	27
Netherlands	9.6	9.6	30
Belgium-Luxembourg	9.1	15.6	38
Taiwan	18.9	18.9	14
Hong Kong	15.0	23.8	18
South Korea	20.8	21.6	24
Switzerland	12.7	12.6	30
Brazil	14.5	11.8	13
Spain	14.3	9.4	39
Singapore	22.0	17.5	27
Mexico	24.8	10.7	35
Austria	10.4	11.7	45

*In nominal terms.
**Services, including income receipts, as a share of total exports of goods and services.

Source: General Agreement on Tariffs and Trade

Some developing countries, led by Brazil and India, oppose the inclusion of services in the new round, insisting that GATT regulations should apply only to trade in goods. International rules, they argue, would permit foreign interference in sovereign areas, such as banking, a key element in development policy. Those countries that have taken protective measures to foster their own information and communications sectors use the "infant industry" argument to oppose a code. They fear that powerful multinationals enjoying large economies of scale would destroy their service industries.

The position of the industrial countries reflects the service sector's rising importance; services now account for over 70 percent of civilian nonagricultural employment in the United States and about 60 percent of Japan's gross domestic product. As rising incomes shift consumer demand toward services in many countries, the advanced nations see great benefits in an agreement to liberalize trade in services. The developing countries would also benefit through increased investment.

The efficiency arguments that support free trade in goods apply equally to services. The world economy loses from small-scale, inefficient service industries designed to serve single-country markets. Furthermore, liberalization of trade in services will promote free trade in goods since the two are closely linked. Exports of many products depend on services, including transportation, communications, advertising, distribution and repair. The liberalization of services would not increase the exports of the industrial countries alone since there are sectors where developing countries have comparative advantages. Singapore, Hong Kong, Taiwan and South Korea, for example, are internationally competitive in such areas as shipping, financial services and construction.

Progress in the negotiating committee on services is likely to be slow given the complexity of the issues, which go beyond traditional commercial considerations and include questions of culture, privacy and national security. Domestic regulatory policies, which account for many of the nontariff barriers in services trade, are difficult to quantify and remove. Furthermore, government monopolies dominate many service industries. The lack of satisfactory data may also hinder negotiation. The congressional Office of Technology Assessment, for example, has estimated that U.S. data on service exports are about 50 percent too low.[3]

Because each service industry is different, a sector-wide agreement appears to be impractical and a series of codes may be preferable. These codes should be based on the principles of transparency and national treatment. Transparency requires open and unambiguous trade regulations -- a critical requirement since many service barriers are in the form of domestic regulations. Recognizing that it is not possible to harmonize the various national regulatory systems, governments should also agree not to discriminate against foreign suppliers of services. Lastly, an agreement should include effective dispute-settlement and enforcement procedures.

Since many service exports require foreign investment, this issue is related to the negotiations on trade-related investment issues. Currently, investment is the one international transaction for which no multilateral agreement exists. The agenda calls for discussion of restrictions on foreign investment that limit trade, such as requirements that foreign companies use a certain proportion of local materials or export a certain share of output.

Trade in Farm Commodities - This subject was generally ignored in previous rounds, leaving agriculture largely outside the GATT system. The rules that do exist are weak and ineffectual. Article 16, for example, permits export subsidies for primary products as long as they are not used to acquire "more than an equitable share" of the market. While the major disputes in farm trade involve export subsidies and quantitative restrictions on imports, domestic farm policies are the fundamental problem.

Ironically, agricultural policies have generally encouraged the production of food in countries where obesity is a major medical problem, while discouraging it in countries where starvation remains a threat. Most advanced countries have pursued policies that are inconsistent with liberalized trade in order to achieve other goals, such as food security and income maintenance for farmers. Price supports for farm goods raise prices above world levels, thereby requiring import quotas to protect domestic producers. High prices, in turn, lead to overproduction, and encourage governments to adopt export subsidies to get rid of the surpluses. These policies have enabled the industrial economies to raise their share of world agricultural exports from about 42 percent in the early 1960s to about 63 percent in the mid-1980s, while imposing significant costs on their economies. The World Bank estimates that if the OECD countries stopped protecting agriculture, their taxpayers and consumers would save more than $100 billion a year, while farmers incomes would drop slightly more than $50 billion.[4]

The Uruguay Round will begin work on agricultural trade next month. Although the farm bloc's power in the industrialized countries makes major reforms difficult, some analysts see a window of opportunity for an agreement in late 1988, following elections in France, West Germany and the United States. Pressure from the Cairns group, a bloc of 13 agricultural exporters led by Canada and Australia, has improved prospects for an agreement. Complaining that it is caught in the middle of an agricultural trade war between the United States and the EC that has destabilized international prices, the group has threatened to boycott the new round if agricultural talks are not included.

More importantly, the spiraling costs of farm programs in the OECD countries is forcing governments to act. In the United States, the cost of agricultural programs rose from $4 billion in 1980 to a record $26 billion last year, making it the fastest-growing spending program at a time when fiscal restraint is essential. The problem is more serious in Europe, where the Common Agricultural Program has pushed the EC to the brink of bankruptcy. The cost of the CAP, which accounts for two-thirds of the EC's budget, rose to about $23 billion in 1986 as the falling dollar pushed subsidy costs higher. The EC took a first step to reduce costs when it decided last December to cut dairy production and beef price supports. But Britain and West Germany have demanded that the EC cut spending more drastically in light of an expected $5.5 billion shortfall in 1987 on top of last year's $1.5 billion deficit that the member governments refused to finance.

Japan paid out about $10.5 billion in farm subsidies in 1985. Now that the Japanese National Railways has been privatized, farms subsidies are the key to reducing the nation's budget deficit. The Ministry of Agriculture, Forestry and Fisheries places the 1986 producer price of rice in Japan at 8.3 times above the United States'. OECD figures show farm subsidies totaled almost 60 percent of the value of Japan's agricultural production, compared to the OECD average of about 33 percent.

Japan, the largest net importer of food in the world, defends its agricultural policies as necessary to maintain some degree of self-sufficiency in food supplies. Japanese self-sufficiency in terms of calories consumed is 53 percent, compared to 77 percent in West Germany, 121 percent in France and 150 percent in the United States. The country's dependence on foreign energy sources, however, limits its ability to achieve self-sufficiency in food, as a cutoff in oil imports would cripple agricultural production.

But there is a growing interest in Japan in the subject of agricultural reform. Earlier this year, two leading business organizations, Keidanren and Nikkeiren, called for an overhaul of farm policies, and the prime minister recently asked the Liberal Democratic Party to study the issue. Japan has agreed to discuss all agricultural issues at the new round, including rice, which accounts for 30 percent of the nation's farm output. Tokyo is also expected to seek at least a 5 percent cut in the price it pays farmers for rice. With agricultural policy under attack at home and abroad, farm groups seem willing to accept the cut, which would be the first in 31 years.

Export subsidies are likely to be the first topic in the Uruguay Round farm trade talks. To incorporate agriculture into the GATT framework, though, negotiations must include domestic farm policies as well. Policies that support farm income without providing incentives for overproduction are the key to reform. If a country unilaterally reduces its farm subsidies, it will lose market share. A reduction in aid to farmers would be more acceptable politically if all countries adopted reforms simultaneously. Prospects for an agreement were bolstered by last month's OECD meeting that called for a reduction in farm subsidies (see JEI Report No. 20B, May 22, 1987).

Conclusion

Given the complexity of the issues on the agenda, some analysts think the Uruguay Round could last as long as 10 years. Moreover, the diversity of interests among GATT members may make it impossible to reach a consensus on particular issues. If negotiations do not produce an agreement, Mr. Yeutter recently warned that the United States will pursue bilateral agreements, such as the free trade area negotiated between the United States and Israel in 1985.

The EC's Roy Denham has termed this approach a "step backwards that would fragment nations into a number of clubs." Many observers criticize possible FTA initiatives as a regression to the narrow, bilateral trade negotiations that characterized the 1930s. Since a FTA discriminates in favor of trade between member nations, import supplies may be diverted away from the lowest cost producer in favor of a member of the FTA.

Although multilateral trade negotiations are the most efficient method of reducing global trade barriers, there are several advantages to the FTA approach. First, it tends to reverse the usual incentives in international trade talks by making countries eager to be the first to agree to liberalize trade rather than the last. In previous rounds, countries hoarded trade barriers as bargaining chips to use in lowering other countries' barriers. With a FTA, though, each side has a reason to be the first to join in order to gain an advantage over outsiders. Second, FTA negotiations allow countries to use free trade rather than protectionism as a lever on countries reluctant to make trade concessions. Threats of protectionism are often not credible since the country imposing the restrictions is frequently hurt as much as, or more than, the foreign country.

Multilateral trade negotiations and FTAs can be used as complementary approaches to lower trade barriers, however. Mr. Yeutter sees no problem, for instance, in participating in the new round while at the same time negotiating a FTA agreement with Canada. Moreover, if the new round breaks down, regional FTAs could be the building blocks of multilateral trade liberalization in the long run. As a FTA adds members and trade diversion mounts, the incentives for other countries to join increase.

Footnotes

[1] Costs and Benefits of Protection," OECD Observer, May 1985, pp. 18-23.

[2] World Bank, World Development Report, 1986.

[3] Office of Technology Assessment, Trade in Services: Exports and Foreign Revenues.

[4] World Bank, Op. Cit.

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IN THIS ISSUE:

Japan's 1986 ODA Figures Reflect Yen's Appreciation 1

Exchange Market Stable After Volcker Resignation 3

Financial Market Focus 5

Japan Sets Course On Iran-Iraq War 8

Takeshita's Lucky Number: 118 10

Fallout From Toshiba Machine Incident Limited, So Far 11

Japan Ratifies MIGA Convention 12

The Bilateral Trade Account: Light At The End Of The Tunnel? 13

Notes: Senate Trade Bill 16

Japan's 1986 ODA Figures Reflect Yen's Appreciation

The value of Tokyo's official development assistance soared in 1986, increasing by 48.4 percent (see Table). The hike is in sharp contrast to 1985's results, when disbursements fell by 12.1 percent. Much of the change can be attributed to the sharp appreciation of the yen during the past year, however. The bulk of Japan's foreign assistance is yen-denominated, but the Development Assistance Committee of the Organization for Economic Cooperation and Development calculates ODA in dollar terms. In 1985 the exchange rate averaged Y238.54=$1.00; last year it was Y168.52 -- 41.6 percent higher.

Net Flow of Financial Resources from Japan to Developing Countries and Multilateral Agencies, 1982-86

(in millions of dollars)

Type of Transaction	1982	1983	1984	1985	1986	Percent Change 1985/86
Official Development Assistance	$3,023	$3,761	$4,319	$3,797	$5,634	48.4%
Change Over Previous Year	-4.7%	24.4%	14.8%	-12.1%	48.4%	
ODA/GNP Ratio	0.28%	0.33%	0.34%	0.29%	0.29%	
Bilateral Assistance	2,367	2,425	2,427	2,557	3,846	50.4
Grants	805	993	1,064	1,185	1,703	43.8
Capital Grant Assistance	412	535	543	636	855	34.3
Technical Assistance	393	458	521	549	849	54.7
Development Lending and Capital	1,562	1,432	1,363	1,372	2,143	56.2
Grants, Capital Subscription and Loans to Multilateral Agencies	656	1,336	1,891	1,240	1,788	44.2

Notes: 1. Net disbursement basis.
2. Due to rounding, the figures do not necessarily add up to the totals.

Source: Ministry of Foreign Affairs

Indeed, in yen terms the picture is somewhat different. Net ODA disbursements rose only 4.8 percent last year, with bilateral flows (which are disbursed primarily in yen) rising by 6.3 percent and multilateral flows (largely in dollars) by 1.9 percent. The ratio of ODA to gross national product was 0.29 percent -- exactly the same as in 1985. (The United Nations recommends that DAC members strive for a 0.7 percent ratio.)

The effect of the yen's rise bodes well for Tokyo's plans to disburse more than $40 billion between 1986 and 1990 and to double the 1985 figure in calendar year 1990. Since the original time frame for this Third Medium-Term Target was seven years (to 1992), Tokyo estimated that an average annual 10.4 percent increase would be required. This may have been beyond the government's reach since in recent years fiscal austerity has limited Japan's budgetary ODA increases to approximately 7 percent.

Because of the yen's appreciation, however, doubling the 1985 ODA figure in seven years would have required only an approximate 5.5 percent average annual increase in outlays from now on. Japan's decision earlier this year to shorten the time frame allows the government to take advantage of the strong yen, make the target more ambitious and enhance the visibility of Tokyo's aid programs all at the same time. In order to disburse some $7.6 billion in 1990, average annual increases of 8 percent will be necessary. This does not appear out of reach, given Tokyo's willingness to expand its aid flows by some 7 percent annually in yen terms and the fact that the exchange rate could easily jump higher than 1986's average -- at least in the foreseeable future.

Still, although the 1985 aid-doubling goal is virtually assured, it is not certain whether Tokyo will disburse the $40 billion total also outlined in the Third Medium-Term Target. Even if Japan disburses $7.6 billion in 1990 (assuming an 8 percent annual growth), the total for the 1986-90 period will only approximately add up to $33 billion using 1986's exchange rate. Conversely, if Tokyo retains its 7 percent annual increase in ODA outlays, an average exchange rate of Y135.7 would be needed to reach the $40 billion mark.

In any case, Japanese officials remain committed to achieving the aims of the Third Medium-Term Target, especially in view of the strong publicity attending Tokyo's recently announced plan to recycle $30 billion to the developing countries (see JEI Report No. 21B, June 5, 1987). To date the government has not estimated how much of this plan will be included in future ODA figures. They do stress, however, that Tokyo regards the two as separate concepts and expects to meet the five-year target irrespective of the $30 billion initiative. Officials also point out that the recycling funds are aimed at middle-income countries. By contrast in recent years the government has pledged to concentrate more of its ODA funds on the neediest developing countries such as those in sub-Saharan Africa.

Eileen Marie Doherty

Exchange Market Stable After Volcker Resignation

Japanese investors reacted cautiously to the June 2 announcement that Paul Volcker would be leaving his post as chairman of the Federal Reserve Board. The departure of Mr. Volcker, who has been a dominant force in U.S. and global economic policy in recent years, makes the future of U.S. monetary policy less certain. What concerns the Japanese, given their huge investment in U.S. securities, is whether Alan Greenspan, who was nominated to be the new chairman, will be as anxious to fight inflation and defend the dollar as his predecessor.

Like Mr. Volcker, Mr. Greenspan is an avowed inflation-fighter who believes that excessive growth of the money supply is the primary cause of inflation. But the financial markets are waiting to see whether he is willing to raise interest rates to promote the stability of prices and exchange rates when such a move might result in a recession. In addition, some analysts question whether Mr. Greenspan, who was chairman of President Ford's Council of Economic Advisers from 1974 to 1977, can control the Fed's seven-member board, which is dominated by supply-siders. And given his links to the Republican Party, some fear that he will be more interested in keeping interest rates low and spurring growth during next year's election campaign than in keeping inflation under control.

Satoshi Sumita, governor of the Bank of Japan, endorsed Mr. Greenspan's appointment. While terming Mr. Volcker's decision not to accept a third term as Fed chairman as regrettable, the Japanese official said he did not anticipate any changes in U.S. monetary policy. The financial markets agreed; after a sharp rise on June 3, the yen settled around the Y143=$1.00 level, about 4 percent below the record high set in late April.

Prime Minister Yasuhiro Nakasone said last week that the yen appears to have finally stabilized, ending a 27-month climb that raised its value by 75 percent on a trade-weighted basis (see Table). One stabilizing factor was the announcement of a Y6 trillion ($42.9 billion at Y140=$1.00) stimulus package on May 29 that Tokyo hopes will boost economic growth to the 3.5 percent real rate projected by the government for FY 1987 (see JEI Report No. 21B, June 5, 1987). Faster growth will boost demand for imports, thus reducing the need for a further appreciation of the yen to lower Japan's trade surplus. Also contributing to exchange rate stability was the warning from the Ministry of Finance in mid-May intended to discourage speculators from selling dollars. In addition, an increase in the U.S.-Japan interest rate gap to more than 5 percentage points has increased Japanese demand for U.S. securities. According to Toyoo Gyohten of the Ministry of Finance, Japan's dollar-denominated foreign investments, which fell to only $1 billion in March, rose sharply in May.

At the same time, an end to the U.S. policy of "talking down" the dollar has helped end its long slide. Washington's commitment to stabilizing the dollar is evidenced by its $4.1 billion in market intervention in the February-April 1987 period, the largest amount in more than six years. Intervention by the United States, Japan, Canada and seven European countries totaled $73 billion, of which about half went to support the dollar. Although the dollar fell 8.4 percent against the yen and 2.1 percent against the West German mark during that period, U.S. officials said the results were positive since the dollar might have fallen even more without intervention.

Although the major industrialized countries agree that current exchange rates are acceptable, many observers question how long the dollar will remain stable. There has been some improvement in the U.S. trade balance; in constant 1982 dollars, the trade deficit fell from an annual rate of $163.3 billion in the July-September 1986 quarter to $134.2 billion in the first three months of 1987. But with most forecasts predicting that the trade deficit (in nominal terms) will still exceed $100 billion in 1988, many financial analysts are betting that the dollar's decline will resume at some point.

Randall S. Jones

Changes in Yen Relative to Currencies of Major Trading Partners

Currency of*	Share of Japan's Trade in 1986**	Percentage Change From End of February 1985 to June 8, 1987
United States	32.6%	80.8%
Republic of Korea	4.7	76.1
China	4.6	137.4
West Germany	4.4	-1.9
Taiwan	3.7	43.8
Australia	3.6	80.8
Canada	3.1	75.5
Britain	3.0	20.4
Indonesia	3.0	172.0
Hong Kong	2.5	80.9
Saudi Arabia	2.4	89.7
United Arab Emirates	2.1	80.9
Singapore	1.8	68.8
Malaysia	1.7	74.4
Soviet Union	1.5	29.2
France	1.5	7.0
Switzerland	1.3	-4.2
Netherlands	1.1	-2.6
Thailand	1.0	65.9
Belgium	0.9	1.3
Trade-Weighted Average		75.1

*Since June 1987 inflation rates are not available, all percentage changes are calculated using nominal exchange rates. Admittedly, it is real, not nominal rates, that affect trade flows. For the countries listed above, though, changes in nominal exchange rates have closely paralleled changes in real rates.

**The top 20 trading partners listed above accounted for 80.6 percent of Japanese trade (exports plus imports) in 1986. The weighted average change in the exchange rate is based on 1985 and 1986 shares of trade.

Source: International Monetary Fund and The Wall Street Journal.

Financial Market Focus

Tokyo took the opportunity of the fifth follow-up meeting on the bilateral yen-dollar accord on May 27 to announce a new series of financial market changes. U.S. Assistant Treasury Secretary for International Affairs David

Mulford responded with praise for the new package as well as previous actions, but reiterated that much remains to be done. Toyoo Gyohten, vice minister of Finance, reviewed recent initiatives and reported the following plans:

- The Ministry of Finance will auction all 20-year bonds (Y2 trillion worth or $14.2 billion at Y140=1.00 in FY 1987) beginning this fall, perhaps as early as October, and employ an "auction method of underwriting amount" to sell 20 percent of its 10-year bonds (approximately Y1.8 trillion or $12.9 billion worth). The shift is intended to give foreign firms a better chance to garner a larger share of Japan's primary bond market than they are allotted under the current bidding syndicate system, which is dominated by domestic firms. Even though the syndicate raised foreign shares in April and allowed more foreign firms to join (see Table), the total allotted to foreigners is still less than 7 percent of any issue.

Japanese Bond Syndicate Shares of Foreign Securities Firms

(in percent of total)

Firm	Prior to March 1987	After March 1987
Salomon Brothers Inc.	0.07%	1.0%
S.G Warburg & Co.	0.07	0.5
Goldman Sachs (Japan) Corp.	0.07	0.5
Jardine Fleming Securities Ltd.	0.07	0.5
First Boston Securities Ltd.	0.07	0.5
Merrill Lynch International Bank Inc.	0.07	0.5
Morgan Stanley International Ltd.	0.07	0.5
Vicker de Costa (Holdings) Ltd.	0.07	0.3
Smith Barney & Co.	0.07	0.3
Kidder Peabody & Co.	0.07	0.1
Kleinwort Benson & Co.	0.07	0.1
W.I. Carr	0.07	0.1
DB Capital Markets Inc.	0.07	0.1
Drexel Burnham Lambert Inc.	0.07	0.1
Bache Securities Ltd.	0.07	0.069
Schroder Securities Ltd.	0.07	0.069
Hoare Govett	0.07	0.069
E.F. Hutton & Co.	0.0	0.069
SBCI Securities Ltd.	0.0	0.069
Shearson Lehman Brothers Inc.	0.0	0.069
UBS Phillips & Drew	0.0	0.069
Sogen Securities Ltd.	0.0	0.069
Dresdner-ABD	0.0	0.069

While the auction to be used for 20-year bonds is similar to the U.S. procedure, a non-competitive system will be used for 10-year bonds. According to MOF, syndicate members will submit tenders on the amount of bonds they wish to purchase, although an upper limit of 1 percent will be enforced to give foreign and small firms an equal chance. Since the bids are submitted immediately before MOF and the syndicate agree on a final price, they can be expected to reflect closely the negotiated terms.

Reaction to the auction system has been mixed. Large Japanese and foreign firms approve of the change, but feel that the government should auction all bonds and let the market determine the price and allotment. Smaller firms are divided -- domestic firms oppose the move and foreign companies favor it. The change may hasten a shakeout of the government bond market as big firms use their deep pockets to oust smaller ones.

- The revolution in the securities industry is opening major opportunities for foreign firms. MOF announced June 3 that foreign banks will be allowed to apply for licenses to trade securities as long as applicants that already have banking entities in Japan work through an existing non-Japanese subsidiary that is not majority owned by a financial institution. This rule has led to some interesting tie-ups. Exxon Corp. will buy a 50 percent stake in BT Asia (Securities) Ltd., a Bankers Trust New York Corp. subisidiary; Manufacturers Hanover Corp. and Chrysler Corp. will operate through existing Asian subsidiaries; and J.P. Morgan & Co. Inc. and Bechtel Investments Inc. will establish a new joint venture. In addition, Chemical New York Corp. will apply under the guise of its Nassau-based joint venture, the Bank of New Providence. A securities license will allow the banks to deal directly with corporate and retail customers as well as trade on a more equal footing with domestic firms.

- In a related move, Mr. Gyohten announced that the Tokyo Stock Exchange will expand its membership by the end of this year, permitting successful applicants to begin trading as early as May 1988 if the new exchange's trading facilities are complete. The vice minister confirmed word that foreign firms would be given equal consideration, almost assuring that foreign membership will rise above the current level of six.

The announcement was particularly good news for Britain, which has repeatedly urged Tokyo to provide reciprocal opportunities. London had warned that retaliation might be necessary if Tokyo was not forthcoming. Chancellor of the Exchequer Nigel Lawson praised the decision, saying "We have made important progress in this financial field with the Japanese." Assistant Treasury Secretary Mulford's response was not nearly so exuberant, but he expressed satisfaction nonetheless.

- Confirming an advisory committee recommendation, Mr. Gyohten said that Japanese corporations would be allowed to issue commercial paper beginning in October. Under the proposed guidelines, about 170 blue-chip firms will be eligible to issue CP with a minimum denomination of Y100 million ($714,300) and a term of one to six months. Because commercial paper notes are usually unsecured, MOF has barred their use until now. The change will provide corporate managers with another short-term financing option as well as create a new financial market with great potential.

- MOF has also developed a timetable for full-fledged stock and index futures trading. If all goes well in the Tokyo bond futures market, the Osaka quasi-index market and trading by domestic firms in overseas financial futures (see JEI Report No. 20B, May 22, 1987), the rules will be relaxed in June 1988 for true stock indexes and in the fall of 1988 for currency futures markets. Investors will be better able to protect themselves against fluctuations by buying futures contracts.

- The minimum denomination for money market certificates will be lowered for a second time this year in October to Y10 million ($71,400), down from the Y20 million ($142,900) level set in April. The upper ceiling on the size of MMCs and certificates of deposit will be removed at the same time. Since April 1 the maximum term of MMCs has been two years.

- MOF and the Bank of Japan are also studying other changes, including the following: overhauling the short-term interbank markets to meet changing needs; introducing a new rating system for domestically issued bonds; examining the distinctions between the various types of financial institutions, such as trust banks and long-term credit banks, with an eye toward eliminating distortions (the elimination of distinctions, however, is not planned); emphasizing the use of electronic banking and services to eliminate backlogs and bottlenecks in the current paper-based system; and discussing capital adequacy standards with British and American banking authorities.

- To help the average investor deal with this explosion of new instruments, MOF granted investment advisory licenses to 56 firms at the end of May, including 17 foreign companies such as Baring International Investment Management Ltd. and Warburg Investment Management Ltd. This field had been the exclusive preserve of trust banks and insurance companies but now includes subsidiaries of 14 securities companies, 12 national commercial banks and two long-term credit banks. MOF is accepting applications for a second group of advisory firms, with priority to applications from companies affiliated with trust banks, regional banks and applicants that were not accepted the first time around. Many companies in the first group have been operating since June 1; MOF expects to announce the second group in September.

While the changes in the bond sale system and access to the Japanese securities market address short-term pressures, the continued edging toward wider use of market-determined interest rates, particularly for deposits, represents the most fundamental change in the Japanese financial system. Progress toward a fully market-determined system has been gradual but steady -- a pace that the Finance Ministry seems likely to maintain.

Jon Choy

Japan Sets Course On Iran-Iraq War

In response to rising tensions in the strategic Persian Gulf, Prime Minister Yasuhiro Nakasone has been seeking ways to expand Japan's security role in support of the United States. The May attack on the frigate USS Stark, Iran's preparations to deploy shore-based anti-ship missiles, and Washington's plans to protect oil tankers have sharply increased tensions in the region where Japan bought nearly 70 percent of its crude oil last year. Mr. Nakasone must carefully navigate between domestic and foreign policy considerations as he seeks to pilot Japan through these dangerous waters.

The diversification of oil supplies has been a central tenet of Japan's energy policy since the first oil shock in the early 1970s. Although Japanese companies have played major roles in developing oil resources in China and Southeast Asia, most of the crude oil Japan imports is still pumped from Middle Eastern wells (see Table). Japanese oil traders have demonstrated their sophistication in recent years by redistributing purchase contracts among competing Middle East suppliers in order to maximize their bargaining leverage and win the most favorable terms. At home, the government has achieved its goal of creating a 90-day stockpile of oil and has set its sights on raising this to a 140-day supply. Nevertheless, Japan remains highly vulnerable to an extended interruption of oil shipments from the Middle East.

Japan's Crude Oil Imports by Area

(in millions of barrels and share of total)

	1983		1984		1985		1986	
	Amount	Share	Amount	Share	Amount	Share	Amount	Share
Middle East	922	70.5%	947	70.1%	878	70.4%	842	68.8%
Saudi Arabia	368	28.2	366	27.1	217	17.4	162	13.2
United Arab Emirates	197	15.1	206	15.3	266	21.3	268	21.9
Iran	144	11.0	94	7.0	90	7.2	81	6.6
Iraq	3	0.2	5	0.4	26	2.1	59	4.8
Southeast and Far East Asia	237	18.1	248	13.4	216	17.3	214	17.5
North and South America	62	4.7	65	4.8	56	4.5	74	6.1
United Kingdom	0	--	0	--	0	--	1	0.1
Africa	16	1.2	9	0.7	16	1.3	7	0.6
Communist Bloc	69	5.3	81	6.0	82	6.6	83	6.8
Total	1,307	100.0	1,350	100.0	1,247	100.0	1,223	100.0

Source: Petroleum Association of Japan

New attention has been focused on the long-running Iran-Iraq war as a result of Washington's decision to protect Kuwaiti oil tankers moving through the Persian Gulf and Iran's announcement that it would deploy anti-ship missiles in the critical Straits of Hormuz. Washington has pointedly reminded Japan and Europe that it will undertake to provide the costly protection even though the United States receives only about 10 percent of its imported oil from Persian Gulf ports. The fact that some European nations depend even more heavily on the area for oil than Japan has prompted congressional calls for more allied support.

At June 4 press conferences, Mr. Nakasone was receptive to the idea of an increased Japanese role in the area but stressed that "peaceful and nonmilitary efforts" would remain the central pillar of foreign policy. "We should make further efforts to stop the Iran-Iraq conflict," the prime minister said, "and take advantage of the unique position Japan has enjoyed in having close communications with both governments." It would be legally and politically unacceptable (and physically difficult) for Japan to send military forces to the Gulf to assist U.S. vessels. Mr. Nakasone hinted that Japan would be willing to help defray the costs of maintaining a multinational shipping defense force but would find financial aid to solo American efforts difficult to support. "We are fully aware that Japan is one of the major beneficiaries" of free access to the Gulf, Mr. Nakasone said.

Japan's public and private sector have tried to build friendly relations with both sides through investment as well as trade. From its position as the world's leading creditor nation, Japan is beseiged by Arab requests for joint projects and increased investment. Although some projects have proved highly successful, others have been somewhat disappointing. The giant Bandar Khomeini petrochemical plant, for example, remains a sensitive issue between Tokyo and Tehran. Foreign Minister Tadashi Kuranari will stop in Tehran on his way home from the Venice summit conference to open a more vigorous diplomatic offensive. Previous Japanese efforts to mediate the conflict have been rebuffed, and there is no lack of criticism of a stronger U.S. military posture in the Gulf, presenting major obstacles to Messrs. Nakasone and Kuranari.

Jon Choy

Takeshita's Lucky Number: 118

The vast majority of the Tanaka faction indicated its tentative support for Noboru Takeshita as the faction's leader and candidate for president of the Liberal Democratic Party when a strong turnout at a rally June 3 recorded 118 attendees. The straw poll came in the aftermath of Susumu Nikaido's declaration on May 14 of his bid for party president as the officially endorsed candidate of the faction (see JEI Report No. 20B, May 22, 1987).

The total of 118 members (of the faction's 141) was a larger number than many anticipated. Observers had said that Mr. Takeshita could count on at least 80 members if he tried to wrest control from Mr. Nikaido, who has been the faction's acting head since the illness of Kakuei Tanaka over two years ago. Mr. Nikaido attempted to force a vote of confidence in his leadership by pre-empting Mr. Takeshita and announcing his candidacy for the party presidency well in advance of the other three presumed candidates -- Mr. Takeshita, Finance Minister Kiichi Miyazawa and LDP executive council chairman Shintaro Abe. The move may have backfired by forcing faction members to line up behind Mr. Takeshita instead of supporting Mr. Nikaido's bid.

In fact, Mr. Nikaido's political stock in the party has been eroding for years, as indicated by the strong support for his rival, who is 15 years younger. While not all 118 members may side with Mr. Takeshita should he decide to form his own faction using the Tanaka group as a base -- observers suggest that the support of as many as 40 of the members is "soft" -- it nevertheless undercuts Mr. Nikaido's already dubious bid for the party presidency

Still, MIGA is far from ready to begin its activities. The United States, which is to provide 20.5 percent of the agency's capital, has not indicated whether it will ratify the convention. And while it is possible that MIGA could operate without this country, it is unlikely. World Bank officials believe that a number of signatory nations are waiting to follow this country's lead before ratifying the convention.

Although the White House has endorsed the agency and the House of Representatives has included authorization for MIGA in two separate bills, the Senate is wavering. Trade-conscious legislators -- especially those representing textile manufacturers -- worry that the agency may harm their constituents by facilitating foreign investment in ventures that compete directly with industries in their home states. These concerns were apparent as the Senate Foreign Relations Committee approved its portion of the omnibus trade bill (S 490); the MIGA authorization included severe restrictions intended to safeguard domestic jobs. According to White House officials, the Senate provision "effectively kills MIGA." Still, the Senate trade debate has just begun and Sen. Dan Evans (R, Wash.) has vowed to fight to change the MIGA portion of the bill either during the floor debate or in a House-Senate conference committee.

The target ratification deadline established under the convention is October 11, 1987. If Congress intends to act within the context of the trade bill, it appears unlikely that it will meet the deadline. More important, however, is the question of whether this country will ultimately ratify the convention in terms that will make it possible for the United States to participate in the agency. If not, MIGA may fall by the wayside. In that case, the European Community has indicated that it may establish a similar regional organization. Treasury Department officials do not rule out the possibility that Japan would join forces with the EC in this regard. This is a scenario the administration hopes to avoid, stressing that Congress is missing the forest for the trees. In the long run the gains generated by greater U.S. willingness to invest abroad could easily outweigh the benefits gained from protecting some domestic sectoral interests.

Eileen Marie Doherty

The Bilateral Trade Account: Light At The End Of The Tunnel?

Much to the relief of economic policymakers in Tokyo and Washington alike, the U.S.-Japan trade numbers finally seem to be headed in the right direction. For the first time since the bilateral trade deficit took on a life of its own in 1983, the red ink subsided on a year-to-year basis in 1987's opening quarter, dipping to $13.6 billion (imports on a Customs value basis) from $14.4 billion in the January-March 1986 period (or to $14.4 billion from $15.3 billion with imports valued c.i.f.). While one quarter of data hardly constitutes conclusive evidence of the long-awaited turnaround in the deficit, three developments suggest that the worst may in fact be over.

For starters, U.S. exports to Japan scaled the twin obstacles of flat Japanese demand and lower agricultural and industrial input prices in expanding 6.9 percent to $6 billion -- a feat obviously attributable to the competitive benefits of the weaker dollar. At the same time, the 2.1 percent decline in American purchases of Japanese-made products to $19.5 billion understated the drop in inflation-adjusted imports since the 9.1 percent increase in the yen's

U.S. Exports to Japan

(in millions of dollars, f.a.s. value basis)

	January-March 1986	January-March 1987	Percent Change
Total Exports	$5,573.6	$5,958.6	6.9%
Industrial Supplies	2,090.6	2,269.0	8.5
Bituminous Coal	158.3	140.0	-11.6
Petroleum Products	189.2	151.5	-19.9
Natural Gas	42.0	33.4	-20.5
Logs and Lumber	235.4	331.3	40.7
Paper Base Stocks	118.4	160.9	35.9
Paper and Paper Products	79.0	91.9	16.3
Organic Chemicals	190.8	209.4	9.7
Inorganic Chemicals	200.9	152.9	-23.9
Plastics and Synthetic Resin Compounds	77.2	87.1	12.8
Manufactured Fertilizers and Insecticides	91.7	94.6	3.2
Steel Scrap	63.1	8.5	-86.5
Nonferrous Ores and Scrap	134.9	107.4	-20.4
Nonferrous Metals	61.7	75.6	22.5
Textiles	27.0	33.0	22.2
Raw Cotton	54.3	99.4	83.1
Hides and Skins	87.3	70.9	-18.8
Leaf Tobacco	23.6	100.7	326.7
Capital Goods	1,476.2	1,510.0	2.3
Nonelectric Machinery	844.6	888.9	5.2
Data Processing Equipment and Parts	335.4	350.1	4.4
Measuring, Testing and Control Instruments	105.5	120.8	14.5
Laboratory Testing and Control Instruments	28.6	30.1	5.2
Scientific, Professional and Medical Equipment	77.7	100.2	29.0
Oil and Gas Field Equipment	23.9	2.1	-91.2
Metalworking Equipment	39.0	30.0	-23.1
Service Industry Equipment	31.8	40.2	26.4
Electric Machinery	224.4	243.3	8.4
Generators and Transformers	19.2	16.4	-14.6
Broadcast and Communications Equipment	88.7	119.8	35.1
Telephonic and Other Electric Equipment	116.5	107.1	-8.1
Transportation Equipment	407.2	377.8	-7.2
Civilian Aircraft	159.7	107.7	-32.6
Civilian Aircraft Engines and Parts	164.1	171.9	4.8
Automotive Parts	53.5	57.9	8.2
Food and Feed	1,238.8	1,128.9	-8.9
Corn	303.0	200.2	-33.9
Sorghum	77.0	54.9	-28.7
Soybeans	248.7	186.4	-25.1
Wheat	109.5	93.2	-14.9

Fruits and Vegetables	126.5	157.6	24.6
Meat and Meat Products	172.0	178.5	3.8
Fish and Fish Products	92.1	139.7	51.7
Consumer Goods	385.4	521.7	35.4
Pharmaceuticals	167.5	171.4	2.3
Toys and Sporting Goods	20.5	29.9	45.9
Cigarettes	26.2	74.9	185.9

U.S. Imports from Japan

(in millions of dollars, Customs value basis)

	January-March 1986	January-March 1987	Percent Change
Total Imports	$19,947.6	$19,529.2	-2.1%
Automotive Products	7,370.7	7,748.1	5.1
Cars	4,415.2	4,417.5	0.1
Trucks	1,463.8	1,468.5	0.3
Automotive Parts	1,486.2	1,861.3	25.2
Capital Goods	6,381.3	6,626.1	3.8
Nonelectric Machinery	4,364.1	4,537.4	4.0
Business Machines	1,990.3	2,187.4	9.9
Metalworking Machinery	334.4	334.2	-0.1
Agricultural Machinery	146.5	148.3	1.2
Specialized Industrial Machinery	370.3	416.0	12.3
Scientific, Professional and Medical Equipment	215.0	209.3	-2.7
Electric Machinery	1,878.6	1,926.2	2.5
Transportation Equipment	138.6	162.5	17.2
Consumer Goods	3,970.5	3,053.5	-23.1
Video and Audio Recorders and Players and Stereo Equipment	1,452.0	885.7	-39.0
Television Sets	228.7	173.4	-24.2
Radio Receivers	63.1	57.2	-9.4
Tableware and Glassware	119.4	100.5	-15.8
Metal Cookware and Cutlery	123.7	106.2	-14.1
Photographic and Optical Goods	280.5	244.5	-12.8
Clocks and Watches	108.8	115.7	6.3
Toys and Sporting Goods	130.0	141.5	8.8
Motorcycles and Parts	342.4	203.9	-40.4
Clothing	138.3	98.2	-29.0
Intermediate Goods	1,929.2	1,808.0	-6.3
Steel Mill Products	740.5	539.1	-27.2
Nonferrous Metals	138.2	113.2	-18.1
Organic Chemicals	177.9	210.7	18.4
Textiles	223.7	205.9	-8.0

value during the January-March quarter, coming on top of a 57.8 percent jump over the course of 1985 and 1986, forced Japanese manufacturers to pass on more of the currency's appreciation. Moreover, after a five-year break, imports reverted to their historical pattern of contracting in the first three months of a new year after peaking during the final quarter of the previous year, this time by 7.6 percent.

The dip in January-March 1987 imports, which occurred against the backdrop of still-rising overall U.S. purchases from abroad, was the product of some familiar factors, including another cutback in steel mill products. But there were also a number of surprises. Heading the list: flat imports of cars and trucks, 1986's pacesetters, as lower volume (down 11.9 percent for cars and 5.6 percent for trucks) canceled out the effects of higher prices. The biggest damper on imports, though, was the steep drop in purchases of videocassette recorders, which were hit by a pause in the market.

Together with an assist from the slow-growing U.S. economy, the yen's appreciation should continue to cut into imports from Japan for the rest of this year. The outlook for exports is a toss-up, however. On the plus side, sales of capital goods expanded in 1987's first quarter even though aircraft deliveries were down. Moreover, consumer goods exports turned in a strong performance, as did most of the manufactured products in the industrial supplies category and the high value-added items in the food and feed group. The question at this point is whether the weaker dollar will continue to enable U.S. exporters of manufactured goods to buck the dampening effects of sluggish growth in Japan. The answer, it goes without saying, will determine whether the 1987 bilateral trade deficit comes in far enough below 1986's number to have a major political impact in the United States.

Susan MacKnight

Notes

Senate Trade Bill - The "fast track" that the Senate leadership promised for its trade bill has detoured a bit in recent weeks as other events took precedence. Partisan wrangling over the federal budget slowed floor action, and committee markups were postponed since several legislators, including Governmental Affairs Committee chairman John Glenn (D, Ohio), were in the Persian Gulf. This does not mean that the trade bill will be permanently pushed to the back burner, however. The most recent rumor on Capitol Hill is that floor consideration will begin during the week of June 15 -- whether or not all committees have completed their portions of the bill. This should not pose a problem to most of the committees involved, although there is some question as to whether the Commerce, Science and Transportation Committee, which is chaired by hard-liner Ernest Hollings (D, S.C.), will approve legislation before the cutoff date.

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The views expressed in this report are those of the authors and do not necessarily represent those of the Japan Economic Institute.

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JEI

REPORT

NO. 24A June 26, 1987

PREPARING FOR THE POST-NAKASONE ERA

Summary

Prime Minister Yasuhiro Nakasone has defied all the odds in Japanese politics. He rose to power despite significant obstacles and has been in office as prime minister and president of the Liberal Democratic Party far longer than anyone expected. It appears, however, that Mr. Nakasone's remarkable tenure is drawing to a close at last. While he will continue to influence the political situation because of the size of his personal faction, it might finally be safe to predict that a new leader will occupy the twin offices of LDP president and prime minister before the end of the year. With that Japan will return to politics as usual, although several new faces on the horizon could revitalize the political scene.

From the Heights to the Depths

Yasuhiro Nakasone was on top of the world less than a year ago. Through adroit political maneuvering, he was able to fulfill a strong personal ambition by calling double elections in July 1986 that strengthened the Liberal Democratic Party's hold on the Diet's upper house and garnered it a record number of seats in the powerful lower house. The prime minister, hoping to secure an unprecedented change in party rules later that year to enable him to remain in office, opted for a high risk strategy and made the election campaign a referendum on his leadership. The party's overwhelming victory made it impossible for party rivals to thwart that bid. Mr. Nakasone reorganized his cabinet and officially began serving his fifth year as LDP president in October 1986.

Yet the situation has changed dramtically in just one year. Voters had second thoughts as soon as the ballots were counted. Did the LDP actually win too many seats in the balloting? Would the majority party become overconfident in the wake of its stunning victory at the polls and press the conservative agenda beyond acceptable limits? Would Mr. Nakasone use the margins to stamp his personal imprint on the fabric of Japanese society?

Those questions were answered quickly. The LDP did not try to muscle its opposition off the Diet floor but did tackle what proved to be a disastrous political and economic problem: finding new revenue sources as part of a program of tax reform. While most party officials agreed that some new revenue source was essential, no politician was willing to risk his political future to resolve the problem. None, of course, except a prime minister at the peak of his power and prestige.

Mr. Nakasone embraced proposals to institute a 5 percent value-added tax while trying to placate voters with the promise of tax cuts and tax simplification. The plan was controversial from the start. Domestic opponents were angered at the prospect of a heavier tax burden and the likelihood of a hike in the sales tax rate in the future. With the economy just muddling along, international critics charged that a value-added tax was counterproductive and urged fiscal stimulus instead. Rivals contended that the prime minister had broken his campaign promise not to institute a new large-scale tax. (The prime minister insisted that he was only favoring a small-scale indirect tax, but the voters did not accept this description.)

The popularity that the prime minister had nurtured so carefully for three years plummeted. Polls showed the cabinet's ratings were dropping with each new round of the sales tax debate, lowering its approval to a level more familiar to earlier political leaders. The gravity-defying popularity of the premier returned to earth with a thud.

Rivals of the prime minister promptly launched another round of predictions that he would soon be forced to resign from office. These forecasts took on new weight once it became clear that the ruling party would lose seats in April's prefectural elections. Once again, however, his political opponents underestimated the prime minister's staying power. As each successive resignation rumor proved false, it became clear that Mr. Nakasone was intent on serving the full-year term awarded by the party leadership.

It now appears that Mr. Nakasone's departure is inevitable. The value-added tax debate may have caused irreparable damage. Although the cabinet has benefited from a rebound in public opinion polls since the LDP agreed to drop the controversial proposal, the increase has been slight. The political damage has been done. Mr. Nakasone is expected to resign on schedule in October, ending his five-year tenure as head of the government. (Only two leaders have served longer in the postwar period: Shigeru Yoshida, who held office for over seven years in two different stints, and Eisaku Sato, who held office for four terms.)

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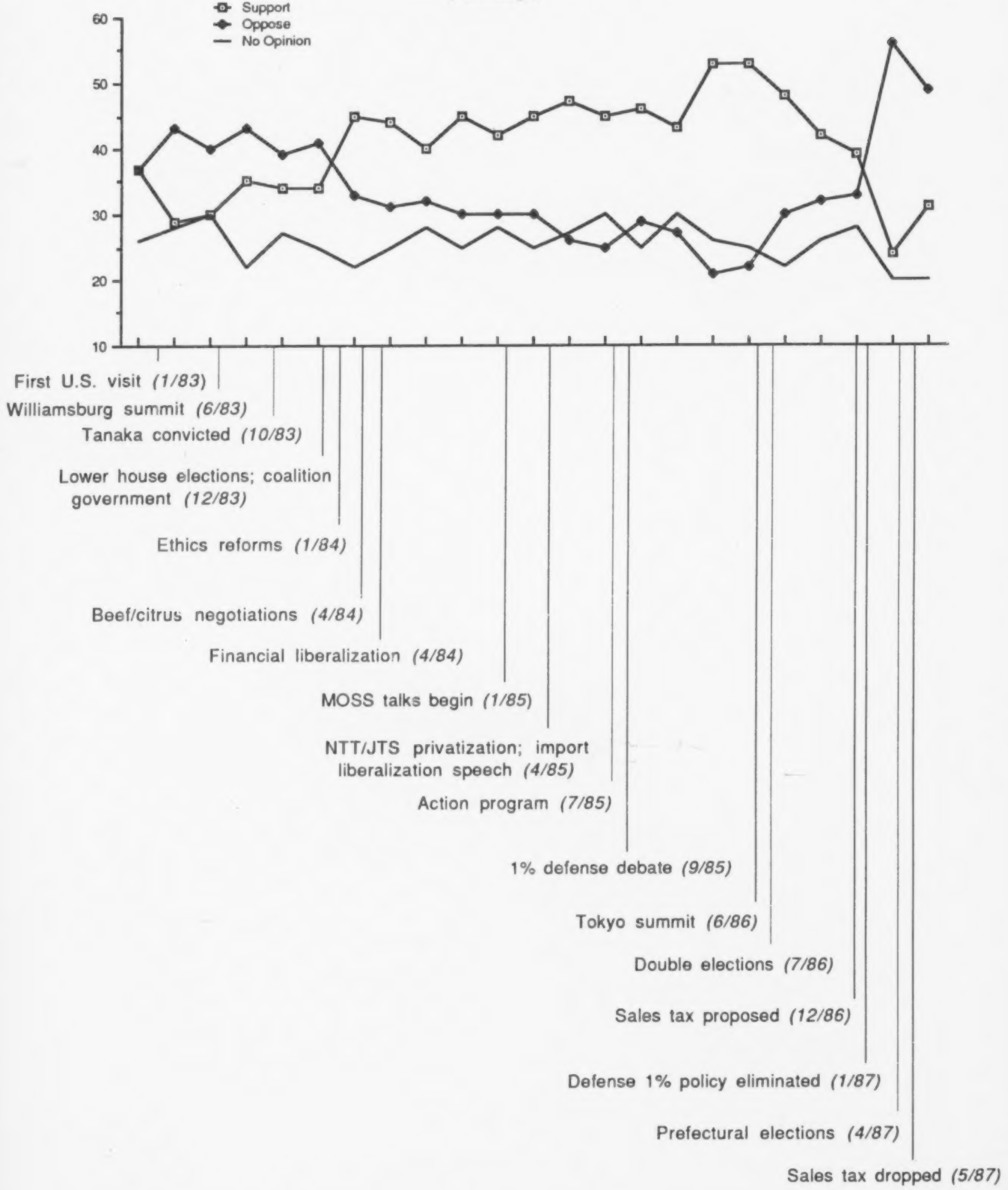
Nakasone Cabinet Popularity Ratings

(Percentage)



The Succession Race

Who will succeed the man that once was criticized as a political weathervane? If a forecast was made today, it would probably favor former finance minister Noboru Takeshita. An extremely popular figure in the LDP, Mr. Takeshita's reputation is based on strong political ties in the party rather than on specific policies. This is fortunate because at one point he was labeled "Mr. High Yen" -- a reference to his role in the September 1985 Group of Five agreement that precipitated the yen's rise against the dollar. The only thing that saved him from political ruin was the subsequent designation of Kiichi Miyazawa as finance minister. Despite his continuing efforts and frequent assurances that the worst was over, Mr. Miyazawa has been unable to prevent the yen from appreciating further, making his predecessor's record less damaging.

At this point, Mr. Takeshita has both the numbers and the financial backing to make him the odds-on favorite in the LDP presidential sweepstakes. His situation is an odd one, though, since most of his immediate support comes from a faction that he does not officially lead. Traditionally, party presidents have assumed the leadership of their own personal faction first. Mr. Takeshita is the favored candidate of the faction of former prime minister Kakuei Tanaka, who was felled by a serious stroke over two years ago and remains in very poor health. The faction itself is nominally headed by Susumu Nikaido. Mr. Nikaido's influence in the party has been waning over the last several years, however, and he is thought to be vulnerable to a challenge by the younger Takeshita.

It is critical that Mr. Takeshita secure the support of the bulk of the faction one way or another. Inheriting the overwhelming majority would give him clear numerical superiority over other contenders. Should he attract just a simply majority or slightly more, his faction would be nothing more than one among many, reducing his leverage within the party. However, it would be unseemly at best and a political disaster at worst if he were simply to declare himself head of the faction. Furthermore, it might be considered poor judgment to openly oppose Mr. Nikaido for leadership of the faction.

Consequently, Mr. Takeshita has been forced to build support for his candidacy largely through surrogates and other indirect means. He has a very strong ally in party elder and Deputy Prime Minister Shin Kanemaru. Mr. Kanemaru has served as something of a broker in the LDP for the last several years -- filling the role that once was played by Mr. Nikaido. Mr. Kanemaru was a key figure behind the Nakasone-Takeshita alliance that engineered the double election strategy of 1986. While the plan favored the short-term goals of the prime minister and Mr. Takeshita's long-term objectives, its value to the party as a whole was what sold it to more reluctant supporters. Mr. Kanemaru has now assumed that same pivotal role in the succession race. He must steer clear of any suggestion of personal bias, however, because Mr. Takeshita is his son-in-law.

The other two so-called "new leaders" are Finance Minister Miyazawa and Shintaro Abe. former foreign minister and currently LDP executive council chairman. Foreign observers frequently tag Mr. Miyazawa as Mr. Nakasone's heir apparent. They are wrong. While Mr. Miyazawa has a distinguished record as a public servant and opinion maker, he lacks the type of political support generated by the Takeshita campaign. While respected, he is not immensely popular and his reputation has been buffeted by the rise in the value of the yen. In any case, he faces an uphill battle despite his qualifications: should intraparty negotiations over a successor become entangled -- for whatever reason -- he could emerge as a compromise candidate. His relative lack of political punch vis-a-vis other contenders would actually benefit him in this case, although it would also mean a short tenure. But more creditable scenarios for resolving a deadlock exist. It is at least equally likely that the party elders would turn to a figure such as chief Cabinet Secretary Masaharu Gotoda until a more powerful politician emerged.

That leaves Mr. Abe, the former foreign minister now executive council chairman -- a post at least as important as his four years in the Nakasone cabinet. It appears certain that the time will come for Mr. Abe -- but not now. In a society that values seniority, Mr. Abe is the youngest of the three "new leaders." (Mr. Miyazawa is senior, but his political liabilities offset the emotional support he might otherwise be able to count on.) Furthermore, in recent months reports originating in Japan have suggested that the prime minister and Mr. Abe have reached an understanding that Mr. Abe will assume the LDP presidency after Noboru Takeshita.

Mr. Nikaido's recent declaration for the LDP presidency complicates the picture in several respects. The immediate problem is that he has declared as the official candidate of the Tanaka faction -- without bothering to take so much as a straw poll among its members, although his action is said to have had Mr. Tanaka's blessing. Moreover, it increases to four the number of potential candidates and raises the possibility of a party primary to narrow the field. Primaries are required under current LDP rules when there are four or more candidates. The rank and file -- currently about 2 million party members -- then cast ballots, and the party convention, which consists of all LDP Diet members, elects one of the top two candidates by majority ballot. It was through this method that Mr. Nakasone won the post of prime minister -- despite the fact that he was not very popular among senior LDP officials and had a relatively small faction in the party. It is highly likely that the party elders want to avoid a situation in which another dark horse emerges.

The reasons for Mr. Nikaido's move remain unclear, but at age 77, he is many years senior to Mr. Takeshita and may feel that this is his last chance. He may also want to salvage his position in the faction, which seems to be eroding. He also faces an uphill struggle. Party rules indicate that candidates must be endorsed by 50 Diet members if their campaigns are to continue. Nikaido supporters seem to believe they can secure the required number by supplementing their support from the Tanaka faction with nonaligned politicians and representatives of the ailing Komoto faction. At this stage, however, it appears that Mr. Nikaido's total will fall short.

Ironically, the declaration of his candidacy may have backfired by forcing Mr. Takeshita to defend his turf and prompting other faction members to declare their loyalties sooner than they had anticipated. At Mr. Kanemaru's urging, Mr. Takeshita held a political rally on June 3 to indicate his intention to seek the party presidency, although he stopped short of making a declaration at the time. More than 100 of the Tanaka faction's 141 members attended the event or sent representatives, suggesting that when the time comes, Mr. Takeshita will inherit the overwhelming majority of the faction. By declaring so early, Mr. Nikaido may have forced more than a few members to side with Mr. Takeshita in the race. Until that time most observers felt that he could count on the support of no more than 80 of the faction's members, although a significant percentage of the 100-plus attendees are considered "soft" supporters.

Finally, there is one more potential runner in the race: Prime Minister Nakasone. The odds at this stage are overwhelmingly against his attempting to hold on for another year or so in office. He would be forced to amend LDP succession rules to allow him even a day longer as party president. Even if that obstacle could be overcome, he would face fierce resistance among those who have patiently waited their turns for the top job. Still, the prime minister might see an opportunity if party members are unable to broker a deal among the three leading contenders, although it is far more likely that Mr. Nakasone will retire and assume the role of senior statesman.

Factional Balances in the Liberal Democratic Party

Name of Faction	Number of Members
Tanaka	142
of which Takeshita (approximate)	118
Miyazawa	89
Nakasone	87
Abe	86
Komoto	33
Independents	10

The Nakasone Record

How will Mr. Nakasone's successors measure up to his record? While many Japanese observers discount the overall influence of the prime minister in formulating policy, there can be no argument that he has played an important catalytic role in the policymaking process. Most of the prime minister's important domestic and international policies, including government reorganization, financial and trade liberalization, and a broader involvement in international security areas, had their origins in earlier years, but Mr. Nakasone did project a sense of personal concern that was highly effective.

Thus, he can claim at least partial credit for accelerating many policy developments and saving others from suffocating under bureaucratic delays. He began modestly, yet significantly, with the 1983 Williamsburg summit, when Japan directly declared its status as a member of the Western alliance. The commitment worked both ways. In the eyes of the average Japanese voter, it meant acceptance by the West as an equal -- an important and symbolic gesture. While the significance of that event tends to be overemphasized, the sense of equality achieved by the nation contributed to public support for the country's expanded international role, increased foreign assistance and higher defense spending. The image of Japan's prime minister standing shoulder to shoulder with other world leaders -- instead of in the background as had been the case with his predecessors -- was and is an important one for Japan.

Another precedent has been the prime minister's length of service. While his rivals resented the fact that he held on to power far longer than the recent two-year average, he was in a position to assure policy consistency and stability -- important considerations for a country that increasingly is expected to play an important global role. The experience and exposure gained by former Foreign Minister Abe would not have been possible had Mr. Nakasone resigned at the end of this first term. As a result Mr. Abe will be a familiar figure to other world leaders when his time comes to assume the top job in the government.

At the same time, the resistance to the Nakasone mold could manifest itself in a reversion to the old ways once he steps down. The potential is particularly high with such figures as Messrs. Takeshita and Abe. While the latter is more likely to come into office with a general vision of Japan's role in the world, the former is very likely to let policies bubble up from the lower and middle levels of the government and party without significantly influencing their course, focusing his actions on efforts to work out a consensus.

While this may be a totally effective way of presiding over Japanese domestic policymaking, it is doubtful that it will prove workable in the international arena, where there is a particularly strong sense of crisis management that has demanded quick responses by Tokyo. Mr. Nakasone has been able literally and figuratively to "stand tall" with other world leaders, projecting a sense of place in the international arena that enabled him to manage the country's foreign policy and international trade interests. Many Japanese observers feel that leaders perceived by other nations as weak are more vulnerable to pressures that could damage national interests. While the Nakasone style often has irritated other politicians and senior bureaucrats, it nevertheless has been conducive to effective management in several critical foreign policy areas.

Economic and Defense Policies

Regardless of who becomes the new prime minister, however, it is unlikely that there will be any major shift in Japan's policies. As noted earlier, many if not most of the policies of the Nakasone era were already established in form or spirit before he took office. There are exceptions to this, however. The degree and pace of government policy changes were significantly influenced by the prime minister's political outlook. In addition to the catalytic role noted earlier, it is extremely doubtful that the government's one percent defense spending limit would have been abolished if, say, Kiichi Miyazawa had been prime minister at the time.

Deciphering the precise policy leanings of the upcoming candidates is difficult, but some differences are noticeable -- especially in comparison with Mr. Nakasone -- and could have important implications for economic and diplomatic policies. Mr. Miyazawa has articulated a personal political philosophy far more extensively than most Japanese politicians. Although he currently heads a ministry still largely committed to tight government budgets, he personally favors a more stimulative economic policy. During the 1984 LDP presidential round, he outlined a program for doubling Japan's economic wealth, patterned after the income doubling campaign of the Ikeda government in the early 1960s. There is no indication that he has abandoned that concept. Mr. Miyazawa is perhaps the most "dovish" of the three "new leaders," and staunchly resisted abandoning the one percent policy. While he is a supporter of the U.S.-Japan alliance, he has been characterized by informed observers as highly critical of the management of that relationship, favoring a more aggressive posture toward the United States in defending Japanese economic interests.

Mr. Abe is best known for his position supporting Japan's official development assistance. His years as foreign minister gave him considerable exposure to international issues and in that respect he, like Mr. Miyazawa, is well-prepared for the premiership. A highly touted "Abe doctrine," which would promote Japan-ASEAN ties, was introduced shortly before the end of his tenure as foreign minister, but like the Fukuda doctrine it mirrored, little has become of it since. It is difficult to identify an Abe approach to domestic economic policies, although one might be able to find a few hints in the record of a former prime minister, Takeo Fukuda, who turned leadership of his faction over to Mr. Abe less than a year ago. Mr. Fukuda played a significant role in the formation of Japan's economic policies when he headed the Economic Planning Agency in 1974-76, squeezing out the oil shock-induced inflation of the period. As the heir to Mr. Fukuda's faction, one might surmise that Mr. Abe would be influenced by Mr. Fukuda's thinking on domestic economic policies.

On defense, Mr. Abe is expected to favor modest increases in defense outlays. Indeed, it is difficult to imagine his deviating much -- in terms of either spending increases or cuts -- once the current five-year procurement program concludes (it is in its third year). He has effectively used the controversy surrounding higher budgets to lobby for increased aid. Defense proponents might try similar leverage should Mr. Abe press for increased aid in the future, a likely possibility given his strong identification with the issue. His relationships with American leaders reflect the same positive aspects as the vaunted Ron-Yasu friendship; that equates with cordial and effective ties with the United States.

Of the three, the frontrunner's policies are the most difficult to divine. Mr. Takeshita would probably be the most favorable of the three toward business interests (although it is more a matter of degree rather than a fundamental divergence). As indicated earlier, he would be most likely to preside rather than rule -- or even actively attempt to influence or mold the decision-making process. His record is closely linked with progress in such areas as financial liberalization, which he sees as in the country's best interests. As the head of government, however, he would be more sensitive to the complaints of those interest groups negatively impacted by such changes. In foreign and security policies, he would probably favor the status quo over any new policy initiative.

Once Mr. Nakasone leaves office, there will be several obstacles to any policy changes that could impede even the most aggressive leader. While many foreign critics would disagree, Japanese policymakers feel that the country has been considerably transformed during the Nakasone years and that the time has come to consolidate rather than supplement those changes. This is particularly true in international trade, since a multilateral negotiating round is approaching and the country has made what it feels are dramatic policy changes favoring liberalization at a time when the trend in many other industrial countries is toward protectionism. Japanese negotiators have at times felt beseiged by a seemingly endless series of demands to eliminate or modify one standard or practice after another. The perception in Washington may differ, but it is possible that the next Japanese administration will look for an opportunity to catch a "breather" in terms of instituting new policy initiatives.

The Post-Post Nakasone Era

What will happen after the governments headed by today's contenders come and go? While it is easy to identify the likely successors to Mr. Nakasone, it is far more difficult to predict the future potential contenders. One short list -- far from definitive -- would include the following:

- Koichi Kato - A member of the Miyazawa faction who has served two terms as director general of the Japan Defense Agency, Mr. Kato came into office with a reputation as a dove, yet emerged as one of Japan's most articulate spokesmen for a balanced defense buildup and increased interaction with the United States to achieve a more effective defense. Mr. Kato has served six terms in the Diet's lower house and at age 48 could have a long and brilliant future in Japanese politics, according to informed observers. He seems to have few drawbacks and boasts a prior career in the Foreign Ministry, overseas educational experience, and exposure to constituent concerns such as agriculture and forestry. Mr. Kato is considered a natural for leadership of the faction once Mr. Miyazawa retires.

- Motoo Shiina - Mr. Shiina is a rarity in Japanese politics: he is widely respected and wields considerable influence in party policymaking circles yet remains unaligned with any specific faction. Like Mr. Kato, the 54-year-old Shiina has gained increased stature in recent years through his input on defense discussions, emerging as something of a Sam Nunn of the Diet. He has a respected political lineage and has assumed important positions in the LDP's policy affairs research committee, considered by many observers as a "must" for higher office in Japan.

- Michio Watanabe - A key member of the Nakasone faction, Mr. Watanabe is likely to inherit the Nakasone faction when the appropriate time comes. He has served as acting secretary general and minister of international trade and industry at different times. Mr. Watanabe is 64 years old.

- Toshiki Kaifu - Although pundits frequently designate Mr. Kaifu as an emerging star on the Japanese political scene, he will have a difficult time overcoming the troubles facing his faction, which is led by Toshio Komoto. Yet at 56, he has time to accomplish that and may eventually restructure the group, whose fortunes have suffered as Mr. Komoto's influence has faded. Mr. Kaifu was one of the few members of the faction beside Mr. Komoto to hold a position in the Nakasone government, serving as education minister in the fourth Nakasone cabinet.

A pressing and still unresolved question concerns the fate of the Tanaka faction. Although it appears likely that Mr. Takeshita will inherit the bulk of its members, any number of individuals within the group are said to be popular enough to split off and form independent factions. This is particularly appealing to these ambitious figures, some observers suggest, because at the age of 62, Mr. Takeshita is likely to remain active for many years to come. The proliferation of factions, however, would complicate the intra-party bargaining process and dilute the influence of established factions by increasing the number of players.

That leaves Mr. Nakasone. His ability to influence the potential process depends on his retaining the loyalty of younger faction members. Mr. Watanabe, for one, might openly challenge Mr. Nakasone after he retires from office, forcing him to relinquish his power to a younger member more capable of generating political favors for the faction as a whole.

The Verdict of History

Recently an observer of the Japanese political scene lamented that "it's too bad Nakasone didn't resign last October. He would have gone down as one of Japan's greatest prime ministers." While that judgment may be harsh, it is undeniably true that the prime minister has lost considerable personal influence as a result of the tax reform/value-added tax debates. A man accustomed to taking political risks, he may have taken too big a chance this time around, ultimately making it impossible for him to remain in office.

But Mr. Nakasone has stretched the rules of Japanese politics to their limits during his tenure. It is highly unlikely that any individual will be able to match that performance for the coming decade. For the next several years, then, it will be business as usual in the Japanese political world -- but not quite -- since expectations are considerably higher these days and the "new leaders" ultimately could take advantage of the precedents set over the last five years. But for the immediate future, it will certainly be a less dynamic reprise.

For further information, contact Michael W. Chinworth.

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IN THIS ISSUE:

Japan's Economy Fails To Reach 3 Percent Growth Mark In FY 1986 1

Reports Focus On Trade Surplus, Economic Structure 3

Tax Reform Slated 5

Japan's Stake In South Korea 6

Toshiba Machine Dispute Heats Up Bilateral Defense Issues 7

Senate Sets July 4 Deadline For Trade Bill 10

Specialty Steel Makers Lobby For Extended Import Relief 11

Notes: Salmon Fishing; Loans To Mexico Written Off 13

Japan's Economy Fails To Reach 3 Percent Growth Mark In FY 1986

The effects of the strong yen held Japan's economy to 2.6 percent inflation-adjusted growth in FY 1986 (April 1, 1986-March 31, 1987), the lowest rate in 12 years. Economic performance fell short of the government's revised 3 percent projection despite an impressive 4.9 percent real gain (at an annual rate) in the last quarter (see Table). This recovery, though, suggests that the economy may have bottomed out.

Japan's Real Gross National Product at Constant (1980) Prices

(in billions of yen, seasonally adjusted, quarterly totals and rates of growth at annual rates)

	FY 1985	FY 1986	April-June 1986	July-September 1986	October-December 1986	January-March 1987
Gross National Product	Y293,332.7 (4.3%)	Y300,887.2 (2.6%)	Y297,230.1 (3.8%)	Y299,438.0 (3.0%)	Y301,619.4 (2.9%)	Y305,263.1 (4.9%)
Personal Consumption Spending	162,999.0 (2.6%)	167,867.7 (3.0%)	166,134.2 (5.0%)	168,282.5 (5.3%)	167,048.0 (-2.9%)	170,023.3 (7.3%)
Private Residential Construction	14,107.9 (2.9%)	15,956.5 (13.1%)	14,808.5 (13.7%)	15,851.9 (31.3%)	16,625.4 (21.0%)	16,728.8 (2.5%)
Private Fixed Nonresidential Investment	53,760.3 (12.9%)	56,336.5 (4.8%)	55,204.3 (1.6%)	55,471.9 (2.0%)	56,617.8 (8.5%)	57,920.4 (9.5%)
Change in Business Inventories	2,016.2 (8.7%)	812.3 (-59.7%)	639.5 (-98.1%)	920.4 (329.1%)	1,351.4 (364.8%)	340.7 (-99.6%)
Government Current Expenditures	27,240.9 (1.9%)	29,098.8 (6.8%)	27,719.2 (1.6%)	28,058.0 (5.0%)	32,065.4 (70.6%)	28,556.7 (-37.1%)
Government Fixed Investment	20,772.5 (-6.4%)	22,289.7 (7.3%)	21,785.4 (15.3%)	22,180.2 (7.4%)	22,428.9 (4.6%)	22,662.8 (4.2%)
Change in Government Inventories	297.9 (*)	825.5 (*)	3,251.8 (*)	1,795.1 (*)	-1,866.9 (*)	118.3 (*)
Net External Sector	12,138.1 (19.9%)	7,700.2 (-36.6%)	7,687.2 (-72.8%)	6,878.0 (-35.9%)	7,349.4 (30.4%)	8,912.1 (116.2%)
Exports of Goods and Services and Factor Income Received	54,496.6 (1.8%)	52,728.3 (-3.2%)	53,044.1 (6.6%)	52,640.0 (-3.0%)	52,127.4 (-3.8%)	53,149.0 (8.1%)
Imports of Goods and Services and Factor Income Paid	42,358.6 (-2.4%)	45,028.1 (6.3%)	45,356.9 (41.8%)	45,762.0 (3.6%)	44,778.0 (-8.3%)	44,236.9 (-4.8%)

*Cannot be calculated or meaningless.

Source: Economic Planning Agency

The Economic Planning Agency reported that domestic demand accounted for 4.1 percentage points of growth in fiscal 1986, but the final figure was pulled down 1.5 percentage points by the external sector. The appreciation of the yen, which made Japanese goods more expensive in terms of other currencies, produced the first decline in exports in eight years, depressing investment and employment by export-oriented firms. But domestic demand, led by the nonmanufacturing sector, achieved its highest growth rate since FY 1979. Boosted by low interest rates, housing starts surpassed the 1.3 million level for the first time in seven years, while a sharp increase in government expenditures accounted for almost 45 percent of the economy's growth in FY 1986.

The January-March quarter's gain was led by personal consumption, which accounts for about 55 percent of GNP. Real growth at a 7.3 percent annual rate was encouraged by the stability of prices. Business investment, led by the electric utilities, remained strong, while government investment rose, spurred by the stimulus package adopted last fall. Surprisingly, the external sector accounted for 0.5 percentage point of the 1.2 percent real quarterly gain, as exports and factor income received from abroad recovered to their highest level since the end of 1985. Japan's investment income from overseas jumped 23.3 percent in the January-March quarter to a record $9.8 billion, offsetting a decline in export volume.

Despite these generally positive results, some analysts remain pessimistic. The Organization for Economic Cooperation and Development, for example, recently lowered its forecast of real Japanese growth in calendar 1987 to only 2 percent. The EPA criticized this projection because it did not include the expected impact of the Y6 trillion ($42.9 billion at Y140=$1.00) stimulus package that is scheduled to be implemented by a special session of the Diet that meets in July. The OECD did concede, though, that the package could raise Japan's growth rate by more than 1 percentage point.

Although the data indicate that Japan's economy is close to a turning point, the growth rate is likely to decelerate in the April-June quarter for several reasons. First, the external sector is likely to slide into the negative column as export volume continues to decline. In addition, the growth in personal consumption will be moderated by the small 0.5 percent rise in summer bonuses, compared to a 4.8 percent increase the preceding year. But Bank of Japan governor Satoshi Sumita expects a gradual but steady expansion in the economy beginning in the latter half of 1987. Mr. Sumita intends to maintain the central bank's expansionary policies that allowed the money supply to increase at a double-digit rate in May for the first time since 1982.

Randall S. Jones

Reports Focus On Trade Surplus, Economic Structure

Two of Japan's most powerful agencies, the Ministry of International Trade and Industry and the Bank of Japan, have called for changes in fiscal and monetary policy in their annual reports. Particular attention is paid to Japan's new position in the global economy and the policies attendant to this status. Both agencies view the current period as a turning point for Japan, raising the stakes in policy debates.

The government has not indicated what if anything it will do about corporate taxes, but the other proposals are practically identical to those submitted at the beginning of this year (see JEI Report No. 20A, May 22, 1987 for details). In addition, the government intends to submit its plan for Y5 trillion ($35.7 billion) in extra spending for Diet approval to counter lagging domestic growth (see JEI Report No. 21B, June 5, 1987).

The proposals have already attracted opposition party criticism; the popularity of the maruyu system makes it a tempting issue for the opposition to take a hard line on. Its tough stance on the sales tax attracted popular support and a similar position against tampering with the maruyu exemption could win the rival parties more respect. Similarly, the opposition is vigilant for any changes that could lead to tax increases. Even though a consensus on Y1 trillion-plus ($7.1 billion) in tax reductions has been reached, there is disagreement over its form: the LDP wants to restructure brackets and rates while the opposition advocates a direct refund. In fact, agreement on the length of the extraordinary session is still elusive. The LDP prefers one lasting at least through September so that both the tax and stimulus packages can be approved. Opposition parties are lobbying for a 30-day session, barely enough to pass the tax legislation. The prime minister, after being bloodied in the VAT fight, is working overtime to pave the way for approval of both packages.

Jon Choy

Japan's Stake In South Korea

Escalating protests against the government in South Korea, stemming in part from President Chun Doo Hwan's April 13 decision to end the debate over constitutional reform, has raised concern over that country's political stability. Recent events hold particular interest for Japan, given its proximity to South Korea and the extensive economic links between the two countries.

Korea was Japan's second-largest trading partner in 1986, with two-way trade totaling $15.8 billion. The Korean market, though, accounted for only 5 percent of Japanese exports compared to the United States' 38.5 percent. In addition, Japanese firms invested $134 million in Korea in FY 1985, bringing the cumulative total to $1.7 billion as of March 31, 1986. Among Asian nations, Korea ranked fourth behind Indonesia, Hong Kong and Singapore in Japanese direct foreign investment.

Aided by the steady depreciation of the won relative to the yen during the past two years, Korea has emerged as a major economic competitor to Japan. According to the U.S. Department of Labor, the average hourly manufacturing wage in Korea last year was only $1.55 compared to $9.50 in Japan. Korean firms have achieved success in a wide range of fields. With sales of 168,000 cars last year, Hyundai Motor Co. produced the best-selling new import ever in the United States. In video cassette tapes, a market once nearly monopolized by Japan, Korean firms have garnered a 30 percent market share.

But since Korean producers rely heavily on components produced in Japan, Japanese firms have also benefited from their competitors' booming exports, which rose 18 percent to a record $36 billion in 1986. About 60 percent of the com- ponents of Korean-made personal computers, for example, come from Japan.

And Mitsubishi Motors Corp. provides the engine components for Hyundai's cars. Korean manufacturing remains dependent on Japan for a variety of products such as integrated circuits and ball bearings (see Table). Although Korea recorded its first trade surplus in 1986, its deficit with Japan more than doubled to $5.4 billion. In an effort to reduce the chronic imbalance, Seoul instructed domestic producers last year to substitute U.S. and European supplies for products currently imported from Japan. Despite this attempt to diversify, Japan's share of Korean imports rose to 34.6 percent during the first five months of 1987 compared to 31.4 percent during the year-earlier period.

Randall S. Jones

Korea's Dependence on Japan for Imports of Selected Products, 1986

Product	Dependence on Japan
Glass bulbs	99.2%
Sound recording and reproduction units	96.5
Watch components	87.1
Cathode-ray tubes	84.8
Automotive components	79.9
Metalworking machinery	74.3
Condensers	74.3
Electric motors	72.7
Steel pipes	71.4
Ball bearings	69.9
Tools and special steel	67.7
Transformers, fuses, etc.	65.7
Capacitors	65.3
Textile spinning equipment	63.8
Integrated circuits	53.9
Peripheral computer products	53.1
Switchboards and control panels	38.1
Electronic measuring instruments	34.9

Source: Sanwa Economic Letter, June 1987.

Toshiba Machine Dispute Heats Up Bilateral Defense Issues

Anger is growing in Congress over Toshiba Machine Co., Ltd.'s sale of sophisticated milling machines to the Soviet Union. While the initial protests appeared to be limited, the subject threatens to affect other defense issues and perhaps the overall bilateral relationship.

Partly in response to the Toshiba incident and partly out of historical irritation at Japan's relatively low defense spending, the House of Representatives approved a measure on June 16 urging the State Department to negotiate with Tokyo for compensation for damages incurred as a result of the sale. The Senate got into the act the following day, with Jake Garn (R, Utah), Richard Shelby (D, Ala.) and John Heinz (R, Pa.) proposing a ban on imports of all products manufactured by parent Toshiba Corp. in retaliation for the illegal

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JAPAN'S NEW INITIATIVE IN THE SOUTH PACIFIC: "EXPECTATIONS ARE INCREASING"

Summary

Japan has been an active player in the South Pacific for the better part of this century. In recent years, however, its primary influence has been economic -- and less significant than that of other industrialized nations. A combination of circumstances makes it likely that Tokyo will accelerate its activities in the Pacific islands, especially in terms of economic assistance. And indeed, Foreign Minister Tadashi Kuranari recently pledged a greater Japanese commitment to the security and development of the region.

A Changing Role For Japan

Japan's annual Diplomatic Bluebook specifies nine islands as part of the South Pacific area: Fiji, Papua New Guinea, Tonga, Western Samoa, Kiribati, the Solomon Islands, Tuvalu and Vanuatu. Tokyo's role in the area was recognized as early as the 1920s when it received a League of Nations mandate for Micronesia after the First World War. Still, Japan has never acquired the importance that Australia, Great Britain and New Zealand (and, to a lesser extent, other Western European countries) enjoy in the region; the islands look to other nations for the lion's share of outside assistance.

In no single country is Japan the most important provider of aid or exports. Instead, Tokyo consistently ranks second or third in both categories. Its rather passive support is reflected in its official policy statements, which, while stressing that Japan will "contribute to stability and prosperity in the region," encourage the islands to continue "working for nation-building through self-help efforts."[1] There are reasons for this approach. First, Tokyo's official aid policy toward all less developed countries has always been based on the concept of self-help and the belief that countries should take responsibility for their own development strategies. Political considerations also impel Tokyo to stay out of the recipients' development policymaking processes. Its attempts to play the part of a distant benefactor have been particularly pronounced in the South Pacific and in Southeast Asia, where memories of the wartime Greater East Asia Co-Prosperity Sphere are all too close to the surface.

A second reason is that, quite simply, other countries have been willing to bear the responsibility for the region. The United States has provided security assistance, while the former colonial rulers -- Australia, New Zealand, Great Britain, West Germany and France -- have taken the lead on economic assistance and trade matters, thereby allowing Tokyo to play a secondary role and concentrate its attention elsewhere in Asia (see Table 1).

The situation is changing, however. Given the importance that Japan, the United States and other Western allies place on the region, all agree that the maintenance of peace and stability is paramount. Although the Pacific has been peaceful in recent years, some observers are beginning to question its stability. A few of the islands have demonstrated an increased receptivity to Soviet economic overtures -- and a growing tendency to complain about Western policies -- prompting concern that the islands may drift away from their pro-Western posture. And it no longer appears certain that traditional donors will maintain their assistance to the region; economic difficulties in Great Britain and Australia have prompted cutbacks in their aid flows to the islands.

It is no surprise, then, that Tokyo has come under some pressure to play a greater economic role. The South Pacific nations insist that higher levels of assistance are required and Washington has urged Japan to use its resources as a sort of "Marshall Plan" in the Pacific. Tokyo has begun to respond to these concerns, recognizing, as one Foreign Ministry official said, that expectations are increasing.[2] Foreign Minister Tadashi Kuranari recently announced a new South Pacific initiative to underscore the government's commitment to the development and security of the region. And although significant obstacles still hinder prospects for economic growth in the region, it appears likely that the islands will look to Japan more often in the future to meet their development needs.

Aid to the Region

The islands of the South Pacific suffer from even more obstacles to development than most developing countries. Certainly they are subject to classic difficulties. Their economies are largely based on the production of primary products -- fish, agricultural goods and minerals -- all of which are extremely vulnerable to price fluctuations. The situation is exacerbated by the fact that the economies of some of these countries depend on a relatively small number of primary products.

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Table 1: Percentage Share of DAC* Countries in Total Bilateral Aid to South Pacific Countries, 1984

	Japan	Australia	New Zealand	West Germany	Netherlands	France	United States	United Kingdom	Others
Fiji	14.6%	42.3%	14.4%	--**	--	--	8.5%	7.1%	13.0%
Papua New Guinea	--	93.3	--	--	--	--	--	--	6.7
Tonga	26.3	33.6	24.0	--	--	--	8.1	--	8.0
Western Samoa	18.3	25.2	34.2	9.8	--	--	9.1	--	--
Kiribati	25.1	18.5	--	--	--	--	--	50.6	5.8
Solomon Islands	--	--	8.8	--	41.8	--	7.3	34.6	8.0
Tuvalu	--	21.4	10.2	--	--	--	--	67.2	--
Vanuatu	--	16.2	--	--	--	35.8	--	43.0	5.0

*Development Assistance Committee of the Organization for Economic Cooperation and Development

**Dashes indicate that a country's assistance is included in "Others" or that it is not a donor.

Source: Ministry of Foreign Affairs, Japan's ODA 1985.

Other stumbling blocks are more specific to the South Pacific. The most important, perhaps, is size. Although it can be argued that a small population and a limited land area increase the effectiveness of aid flows (and certainly the islands receive more foreign assistance per capita than any other region in the world),[3] this is not necessarily the case. Japanese development specialist Akira Tsusaka says that "for most South Pacific developing countries, 'small' may be an albatross rather than an advantage,"[4] citing the diseconomies of scale that are inherent in the countries' size. It is more cost efficient for the islands to import the goods they need rather than create a broad manufacturing base at home. And in fact, when asked about aid to the region, this was the first problem mentioned by one Japanese official: the limited scale of the economy makes aid initiatives difficult to implement.

In addition, some of the islands (e.g., Kiribati, Western Samoa and Papua New Guinea) must cope with the fact that much of their land is not suitable for agriculture. Inadequate infrastructure facilities, a serious problem for most LDCs, is even worse in the South Pacific, where countries consist of as many as 322 individual islands (Fiji); consequently, transportation and communication difficulties abound. And finally, ever-growing trade and current account deficits have made the islands more dependent on external resources, whether they take the form of direct aid flows or increased exports to other countries.

To date, Tokyo's efforts in the region have only accounted for a small portion of its official development assistance, approximately 1 percent of total bilateral ODA. The Ministry of Foreign Affairs attributes this to the size of the countries and the relatively short period of time that they have been independent. (Most of the nine islands won their independence in the 1970s.) However, Tokyo is aware of the growing demands and says quite frankly that the South Pacific nations expect Japan to provide more economic aid.[5] MFA points out that Japan's aid to the region is steadily expanding, noting that grant aid increased 5.7 times and technical cooperation by 6.15 times in the 1975-84 period.

Tokyo disbursed a total of $19.7 million (converted at 1985's average exchange rate of Y238.5) to eight of the nine islands in calendar 1985, the latest year for which complete data are available (see Table 2). (Nauru, the wealthiest of the group, did not receive Japanese aid since its phosphate deposits give the country one of the highest per-capita incomes in the world. Its supplies, however, are expected to be exhausted as early as 1990.) Papua New Guinea received the lion's share of the total, while Tuvalu and Vanuatu were the least-favored recipients. The overwhelming majority of Tokyo's economic assistance is comprised of grants and technical cooperation; the only countries that have received loans in recent years are Papua New Guinea and the Solomon Islands.

MFA's South Pacific aid policy emphasizes four factors: assistance is proportionate to the size of the country (as measured by gross national product, population and other factors), and concentrates on human resources, agriculture and fisheries, and basic human needs. Grant assistance, however, has primarily been directed toward improving transportation facilities and enhancing the fishing industry. The rationale behind the first focus is straightforward -- transportation is a fundamental requisite to economic development

Table 2: Japan's Aid to South Pacific Nations, 1981-85

(in millions of dollars)

	1981	1982	1983	1984	1985
Fiji					
Grants	$2.19	$3.81	$2.05	$3.44	$8.15
Loans	-0.10	-0.60	0.00	0.00	0.00
Total	2.09	3.21	2.05	3.44	8.15
Papua New Guinea					
Grants	1.30	1.51	1.14	1.63	2.27
Loans	1.09	2.18	2.37	4.56	1.68
Total	2.39	3.69	3.51	6.19	3.95
Tonga					
Grants	3.40	0.76	2.01	3.26	1.33
Loans	0.00	0.00	0.00	0.00	0.00
Total	3.40	0.76	2.01	3.26	1.33
Western Samoa					
Grants	3.85	3.48	3.04	2.01	1.82
Loans	0.00	0.00	0.00	0.00	0.00
Total	3.85	3.48	3.04	2.01	1.82
Kiribati					
Grants	0.62	1.92	2.53	2.60	2.80
Loans	0.00	0.00	0.00	0.00	0.00
Total	0.62	1.92	2.53	2.60	2.80
Solomon Islands					
Grants	2.91	3.35	1.79	0.48	1.01
Loans	-0.21	-0.19	-0.20	0.43	-0.20
Total	2.70	3.16	1.59	0.91	0.81
Tuvalu					
Grants	0.91	0.88	0.01	0.03	0.07
Loans	0.00	0.00	0.00	0.00	0.00
Total	0.91	0.88	0.01	0.03	0.07
Vanuatu					
Grants	0.12	0.87	0.32	0.05	0.75
Loans	0.00	0.00	0.00	0.00	0.00
Total	0.12	0.87	0.32	0.05	0.75
Total					
Grants	15.30	16.58	12.89	13.50	18.20
Loans	0.78	1.39	2.17	4.99	1.48
Total	16.08	17.97	15.06	18.49	19.68

Source: Ministry of Foreign Affairs, Japan's ODA 1985 and will encourage foreign investment in the region, thus partially ameliorating the deficit problems facing the islands. Efforts to develop the fishing industry stem from a belief among some development specialists that the key to economic well-being in the region lies in the resources beyond the shores. As Mr. Tsusaka suggests, the "greatest economic challenge to the countries is, perhaps, turning the disadvantage of their geography into advantage, most notably by exploiting the immense ocean areas which are under their control."[6]

To these ends, in FY 1985 Tokyo agreed to spend Y541 million ($2.4 million at FY 1985's average exchange rate of Y221.09=$1.00) on a fish marketing project in Tonga; Y1.1 billion ($5 million) on domestic transportation and airport facilities in Western Samoa; Y939 million ($4.3 million) on the construction of the Batio-Bairiki Causeway and Fisheries Channel in Kiribati; and Y393 million ($1.8 million) on the improvment of village fisheries equipment in Vanuatu. Much of the remaining grant funds went to educational projects in the region.

Beyond Economic Assistance: Trade and Investment

As noted earlier, the South Pacific is extremely dependent on foreign trade, not only to pay off existing loans but also to purchase many necessary manufactured items that are not made domestically. And since the nine countries all export similar products, regional trade does little good. Traditionally, the region's chief trading partners have been the same countries that provide the most economic assistance -- especially Australia and New Zealand. Japan plays a large role as an exporter to the region and is one of the top four sellers to nearly all nine countries -- although in no single instance does it enjoy the number-one position.

As for imports, Japan is not a top customer for most of the island countries (except for the Solomon Islands and Papua New Guinea), although it does buy timber and minerals from the region. However, these import figures understate Japan's economic activities in the South Pacific since they exclude agreements with several islands covering tuna fishing within the countries' 200-mile fishing zones. These catches do not show up in trade figures but certainly enhance the region's commercial base.

While it is true that, from the islands' perspective, Japan is more important as a seller than as a buyer, Tokyo has consistently run a trade deficit with the region in recent years (see Table 3). In 1986 alone, Japan was in the red by some $121 million. Its most important trading partner in the region by far is Papua New Guinea, which in 1986 accounted for 61 percent of Japan's total exports to the South Pacific and 85 percent of its total imports (see Figures 1 and 2). Moreover, as Figure 3 shows, it has also been the destination of most of Japan's investment in the South Pacific. Annual investment figures for the region are somewhat misleading, though, since the fact that investment funds in the countries are so small means that any new project in a country will dramatically affect the rankings.

By Japan's standards, then, trade and investment in Oceania -- other than in developed countries such as Australia and New Zealand -- is minimal (see Figure 4). Part of the reaon for this is, of course, the small scale of the Pacific economies. Still, the islands would like to see more private

Table 3: Japan's Trade with South Pacific Nations, 1982-86

(in millions of dollars, exports f.o.b./imports c.i.f.)

	1982	1983	1984	1985	1986
Papua New Guinea					
Exports	$127.4	$141.6	$141.5	$133.5	$137.5
Imports	286.4	322.2	283.9	251.5	294.5
Trade Balance	-159.0	-180.6	-142.4	-118.0	-157.0
Solomon Islands					
Exports	8.3	14.9	15.2	16.0	19.8
Imports	43.0	35.2	42.0	43.2	30.9
Trade Balance	-34.7	-20.3	-26.8	-27.2	-11.1
Fiji					
Exports	53.6	57.2	52.7	49.4	43.4
Imports	5.7	8.3	15.2	16.0	19.8
Trade Balance	47.9	48.9	37.5	33.4	23.6
Western Samoa					
Exports	4.5	4.2	4.9	6.6	4.2
Imports	4.0	1.0	0.7	0.7	1.0
Trade Balance	0.5	3.2	4.2	5.9	3.2
Nauru					
Exports	2.1	1.4	4.0	0.7	0.8
Imports	2.2	4.1	0.6	0.0	0.0
Trade Balance	-0.1	-2.7	3.4	0.7	0.8
Tonga					
Exports	1.6	2.8	2.9	1.8	3.8
Imports	0.0	0.1	0.1	0.0	0.1
Trade Balance	1.6	2.7	2.7	1.8	3.7
Tuvalu					
Exports	1.5	0.0	0.0	0.0	0.0
Imports	0.0	0.0	0.0	0.0	0.0
Trade Balance	1.5	0.0	0.0	0.0	0.0
Kiribati					
Exports	4.1	2.9	3.4	3.4	3.4
Imports	0.9	0.6	0.0	0.1	0.1
Trade Balance	3.2	2.3	3.4	3.3	3.3
Vanuatu					
Exports	5.2	8.2	6.7	6.9	13.6
Imports	0.3	1.1	4.0	4.3	1.6
Trade Balance	4.9	7.1	3.7	2.6	12.0
Total					
Exports	208.3	233.2	231.3	218.3	226.5
Imports	342.5	372.6	346.5	315.8	348.0
Trade Balance	-134.2	-139.4	-115.2	-97.5	-121.5

Source: Japan Tariff Association, Summary Report: Trade of Japan

Figure 1: Japan's Exports to the South Pacific, 1978-86

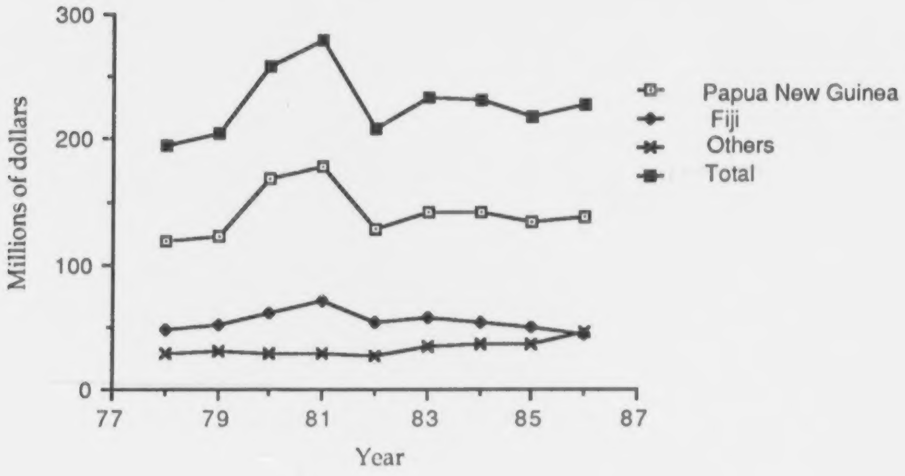


Figure 2: Japan's Imports from the South Pacific, 1978-86

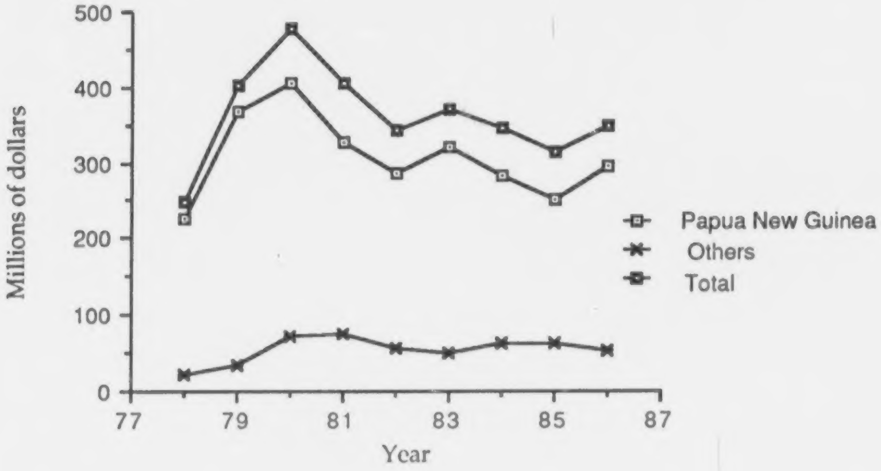
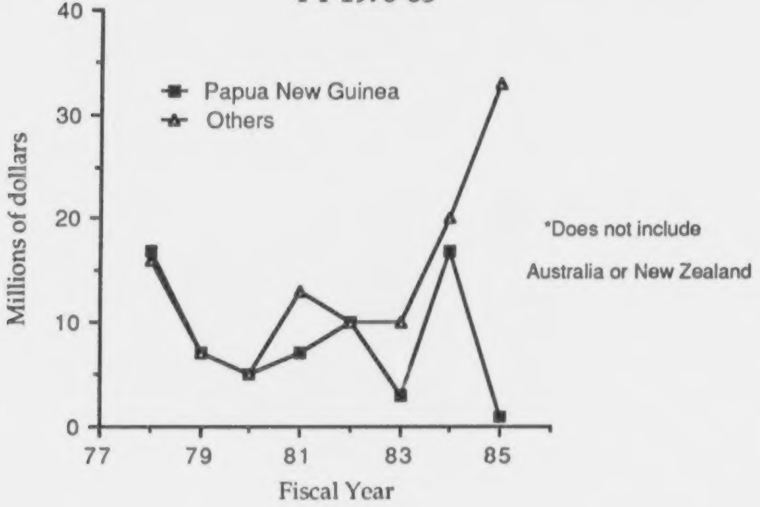


Figure 3: Japan's Investment in South Pacific Islands

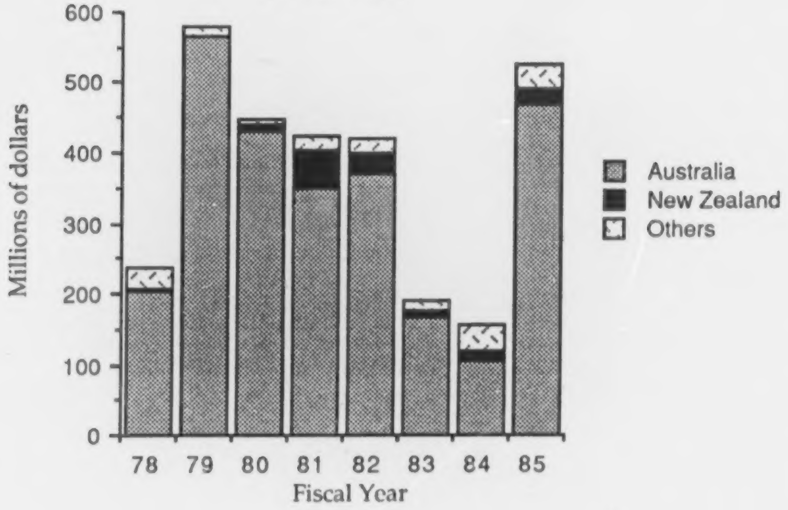
FY 1978-85*



*Does not include Australia or New Zealand

Figure 4: Japan's Investment in Oceania

FY 1978-85



initiatives from Japan -- in both trade and investment -- to bring much-needed cash into their economies. Substantial increases in either area will probably not be forthcoming until more progress is made in developing the Pacific economies, thus making the islands attractive for Japanese business ventures.

The Politics of the South Pacific: A Tense Interdependence

A recent newspaper article summed up Japan's relationship with the South Pacific: "As Tokyo's leaders realize, Japan needs the Pacific and the Pacific needs Japan."[7] This is true enough and provides ample incentive for Japan and other members of the Western alliance to find acceptable solutions to the problems in the relationship. One of the snags in accomplishing this goal, however, is that the Pacific islands have a different agenda than Japan and the United States.

According to an official from Vanuatu, three issues cause the most concern to the Pacific countries. First, he said, existing colonialism in the region should not be tolerated, especially since there are more non-independent areas in the South Pacific than in any other region of the world. That Washington continues to support French colonial claims to French Polynesia and New Caledonia is an irritant that only serves to exacerbate existing resentment toward the West. Tokyo is apparently keeping a low profile on this question. State Department officials say they have no indication of Japan's position on the matter.

A second grievance is the question of nuclear testing. French nuclear tests in Muroroa have prompted cries of indignation from the Pacific countries and according to the Far Eastern Economic Review, "murmurs of neutralism."[8] Eight members of the South Pacific Forum, a 13-member group of regional countries (including Australia and New Zealand), have signed a treaty declaring the region a nuclear-free zone. These signatories will neither make nor store nuclear weapons. New Zealand and Vanuatu have taken the ban a step further; they refuse to allow nuclear warships to call at their ports.

Finally, the islands insist that they need more assistance in developing their economies -- especially since they are desperately in need of currency to alleviate their persistent deficits. Some observers fear that the Pacific countries' economic difficulties will grow so serious that they will begin to welcome Soviet offers of economic assistance. Indeed, two countries, Kiribati and Vanuatu, have already signed fishing agreements with Moscow, allowing Soviet ships to fish in South Pacific territorial waters in exchange for hard currency.

Western countries are watching these developments with growing alarm. Allowing Soviet merchant marine vessels into the area increases the likelihood that Soviet submarines (or espionage vessels) will gain access to the region as well. Tokyo and Washington are only too aware that this could seriously jeopardize the region's security -- including access to Japan's sealanes as well as the waters that link Hawaii, the Philippines, Guam and Japan.

Nor are all the Pacific countries attempting to minimize the significance of these agreements -- although they do stress that they are based on economic rather than political grounds. Still, President Ati George Sokomanu of Vanuatu (the only nonaligned country of the nine) did not hesitate to issue a warning to the West last month: "If you leave the islands, because they are so small and they have no . . . natural resources, they are vulnerable to temptation when facing offers like that of the USSR."[9] The State Department appears to agree, cautioning that in the absence of economic stability, "the region's political institutions will come under considerable and perhaps irresistible pressure to adopt more radical solutions."[10]

Much of the islands' rhetoric, no doubt, is designed to gain as much economic leverage as possible from the fishing agreements. The possibility of Pacific economic cooperation with the Soviet Union is, after all, the best bargaining tool available to them. Still, as long as the islands make economic assistance their top priority, the Soviet Union can offer a viable alternative to Western aid. And as long as the Western alliance depends so vitally on the region for its security -- not least for the protection of Japan's southern borders -- the islands' threats to expand their economic collaboration with the Soviets will be viewed as credible. One Japanese diplomat called the situation a game of very high stakes that Japan, the United States and the Soviet Union are playing. Because the stakes are so high, he said, the situation is not compatible with the views of countries such as New Zealand, which takes a somewhat standoffish position with regard to regional politics.

Certainly the tilt of the region is toward the West. The Economist went so far as to call the South Pacific "uncompromisingly Western, despite occasional murmurs of neutralism."[11] While this may be a comforting characterization, those murmurs are worrisome enough to prompt Tokyo to issue a few warnings of its own. For example, Foreign Minister Kuranari has stated unequivocally that Japan "cannot support the introduction of new tension into this peaceful and untroubled region."[12]

However, Japan may be more hesitant than the United States to condemn the Soviet fishing agreements out-of-hand. Although the agreements are just as unsettling to Tokyo, at least one Japanese newspaper has advocated taking them at face value. Ultimately, Kiribati and Vanuatu signed the accords for valid economic reasons, argued the daily Nihon Keizai Shimbun. Consequently, it may be in Tokyo's best interest to step up its economic assistance, thereby tackling the causes of the problem, rather than focusing on Soviet intentions and actions.[13]

Pacific Basin Cooperation

One of the basic tenets of Japan's Pacific policy is to encourage regional cooperation through organizations such as the South Pacific Forum.[14] The idea of an all-inclusive regional group is an oft-discussed concept, with its logical culmination in Japan's support for the establishment of a comprehensive forum to promote Pacific Basin cooperation among Japan, the United States, Australia, New Zealand, ASEAN (Association of South East Asian Nations) countries, northeast Asian countries and the Pacific islands. Developed by Japanese business and academics in the 1950s and 1960s, the original concept was to establish a Pacific Economic Community; Tokyo was one of the most active supporters of this idea.

In 1967, largely due to Japan's efforts, the Pacific Basin Economic Council was established. Its members include business representatives from

Japan, the United States, Canada, Australia and New Zealand. One year later, the first session of the Pacific Trade and Development Conference was held; its members too were from the industrialized countries. Not until a later session did developing-country representatives attend the meetings.

Other regional groups were also established. For example the Pacific Economic Cooperation Conference was set up in 1980 by ASEAN members, South Korea and some of the Pacific islands largely to act as a liaison between PBEC and PAFTAD. Finally, the United Nations Economic and Social Commission for Asia and the Pacific was set up in 1947 to promote economic and social development in the region (see Map). The idea of a broader Pacific Community achieved some prominence under then-Prime Minister Masayoshi Ohira but after his death in 1980 the movement slipped, resurfaced briefly under Zenko Suzuki and then faded again.

Prime Minister Yasuhiro Nakasone has again focused attention on the idea -- but with some variations. Over the years the focus has shifted from a Pacific Economic Community to Pacific Basin cooperation. Part of the reason for this is that the potential members are wary of establishing an overly rigid structure. All agree that a Pacific Basin plan should not be modeled after the European Community. Smaller participants fear the possibility of committing themselves to an organization that will ultimately subordinate the interests of developing countries to those of Japan, the United States and other industrialized participants.

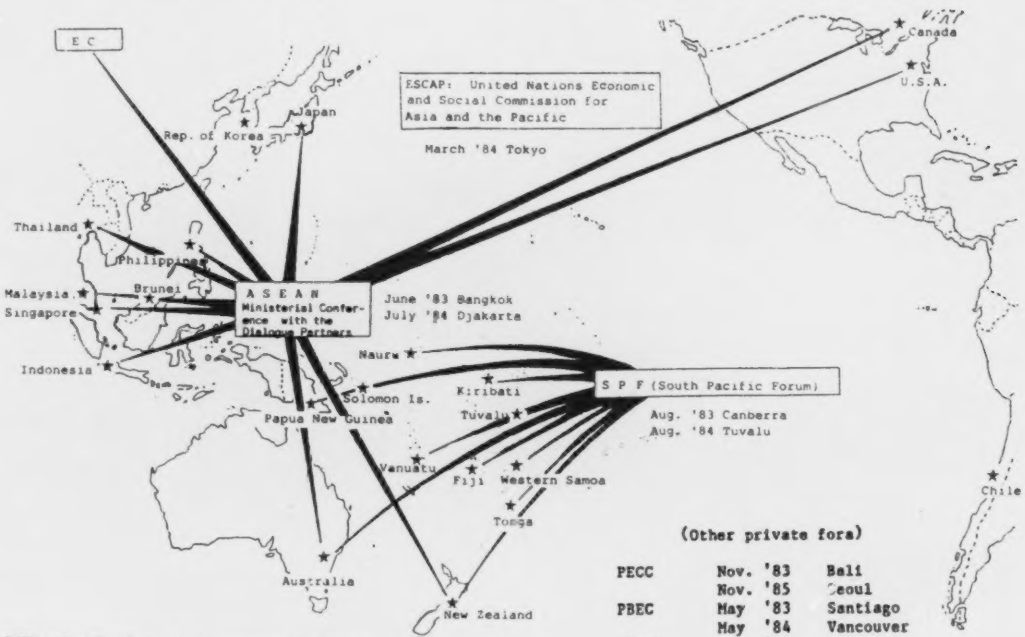
Tokyo has said that any Pacific Basin plan would be centered around the needs of the developing countries, with Tokyo and Washington providing financial and technical assistance rather than leadership.[15] Another reason for Japan's reluctance to take the lead in Pacific cooperation is that Tokyo has no wish to antagonize other -- especially European -- trading partners. Clearly, policymakers recognize the necessity of balancing regional and international interests -- and a strong drive toward Pacific integration could tip the scales too far toward Japan's regional role.

In 1985 Mr. Nakasone expressed support for increased Pacific cooperation during his tour of the United States, Fiji, Papua New Guinea, Australia and New Zealand. He eschewed a leadership position for Japan, calling instead for low-profile cooperation and exchanges on economic, cultural, scientific and technical matters. But this ideal cooperation appears to be a long way off. The barriers to reaching a consensus among the Pacific Basin countries remain significant. In addition to the political disputes discussed above, the sheer diversity among regional players is staggering. In contrast to the similarities among members of the EC, the Pacific countries include newly industrialized countries, developing countries (mainly the islands) and "post-industrialized" economies such as the United States and Japan. Moreover, far from enjoying the geographic proximity of the EC countries, the physical distance separating some of the prospective members of a Pacific organization is also daunting. And finally, because of the different levels of commitment among participants, it is still not clear what "Pacific Basin cooperation" entails.

Prospects for the Future

There is little doubt that Japan will continue to increase its presence in the South Pacific. In the short term, this is likely to take the form of

Fora for Regional Cooperation in the Asia-Pacific Region (Mainly on Economic Subjects)


E C
ESCAP: United Nations Economic and Social Commission for Asia and the Pacific
March '84 Tokyo
Canada
U.S.A.
Japan
Rep. of Korea
Thailand
Philippines
Malaysia
Singapore
Brunei
Indonesia
A S E A N Ministerial Conference with the Dialogue Partners
June '83 Bangkok
July '84 Djakarta
Nauru
Solomon Is.
Papua New Guinea
Kiribati
Tuvalu
Vanuatu
Fiji
Western Samoa
Tonga
S P F (South Pacific Forum)
Aug. '83 Canberra
Aug. '84 Tuvalu
Australia
New Zealand
Chile

(Other private fora)

PECC	Nov. '83	Bali
	Nov. '85	Seoul
PBEC	May '83	Santiago
	May '84	Vancouver
PAFTAD	June '84	Singapore

PECC: Pacific Economic Cooperation Conference

PBEC: Pacific Basin Economic Council

PAFTAD: Pacific Trade and Development Conference

Source: Ministry of Foreign Affairs, Diplomatic Bluebook (1984 edition) more aid flows, as both the developed countries and the islands continue to argue that the region is becoming an essential part of Tokyo's expanding international responsibilities.

Foreign Minister Kuranari discussed the subject on his January 1987 tour of Fiji, Vanuatu, New Zealand, Australia and Papua New Guinea. During his 10-day visit Mr. Kuranari pledged a "new Pacific policy," largely in response to requests issued last year at the summit conference of the South Pacific Forum. The initiative involves a renewed commitment to play a major role in the area's development and stability. The foreign minister said that Tokyo respects the independence of the nations in the region and will not interfere with their autonomous initiatives. Second, he said, the South Pacific Forum and other organizations will work toward regional harmony. The foreign minister confirmed Japan's commitment to stability in the Pacific, including additional economic assistance to promote regional development. And finally, he encouraged exchanges to increase contact among Pacific countries.

The content of Mr. Kuranari's South Pacific speech resembles Tokyo's policy toward ASEAN nations -- a commitment to regional stability through increased economic support within the context of greater regional understanding through "heart-to-heart" contacts. The tenets of the "Fukuda Doctrine," which was announced to Southeast Asian countries a decade ago, are thus apparently in the process of being extended to other regional players.

One Pacific island official summed up the present situation very simply: "Any assistance we can get from anybody is very important." Although this sort of statement carries an implicit threat, it is evident that the islands are hoping that the West will provide such assistance. And it will be increasingly true that the region -- and the rest of the world -- will depend on Japan to be the economic benefactor of the South Pacific.

Footnotes

[1] Ministry of Foreign Affairs, Diplomatic Bluebook (1984 edition), p. 50.

[2] Asahi Shimbun, October 26, 1986.

[3] Wall Street Journal, March 5, 1987.

[4] Akira Tsusaka, "South Pacific Developing Countries: Development Issues and Challenges," Asian Development Review, 1984 (No. 1), p. 66.

[5] Ministry of Foreign Affairs, Diplomatic Bluebook (1982 edition), p. 47.

[6] Tsusaka, op. cit., p. 65.

[7] Asian Wall Street Journal Weekly, May 4, 1987.

[8] Far Eastern Economic Review, July 20, 1985.

[9] Kyodo News Service, June 8, 1987.

[10] Asian Wall Street Journal Weekly, op. cit.

[11] The Economist, July 20, 1985.

[12] Asian Wall Street Journal Weekly, op. cit.

[13] Nihon Keizai Shimbun, January 19, 1987.

[14] Ministry of Foreign Affairs, Diplomatic Bluebook (1984 edition), op. cit., p. 50.

[15] Far Eastern Economic Review, January 31, 1985.

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The view expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

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JAPAN · ECONOMIC · INSTITUTE

JEI

REPORT

NO. 25B
July 2, 1987

IN THIS ISSUE:

Cabinet Approves Supplementary Budget 1

Kuranari Pledges New Aid Package For ASEAN Nations 3

Fence Mending In Beijing 5

Roundup Of Fishing And Whaling Developments 7

Japan's Foreign Direct Investment Takes Off 8

Notes: Senate Trade Bill 12

Cabinet Approves Supplementary Budget

On June 23 the Japanese cabinet approved a Y2.08 trillion ($14.9 billion at Y140=$1.00) supplementary budget for FY 1987 (April 1, 1987-March 31, 1988) that will be submitted to a special session of the Diet in July. The extra expenditures, the largest in 13 years, are necessary to implement the Y6 trillion ($42.9 billion) stimulus package adopted last month. Local governments and the business sector are expected to provide Y3 trillion or so of the Y5 trillion ($35.7 billion) increase in spending called for in the package. In addition, the tax reform legislation that will be submitted next month (see JEI Report No. 24B, June 26, 1987) is expected to result in a tax cut of about Y1 trillion ($7.1 billion).

The additional spending will be funded in part by Y1.36 trillion ($9.7 billion) worth of government construction bonds (see Table 1). Other revenue sources include the budget surplus carried over from FY 1986 and funds from the sale of some of the Nippon Telegraph and Telephone Corp. stock Tokyo holds.

The government expects to earn Y5.5 trillion ($39.3 billion) from the sale in FY 1987 and will use the bulk of the money to redeem outstanding government bonds.

Table 1: FY 1987 Supplementary Budget*

(in billions of yen)

Expenditures	Amount
Public works	Y1,358.5
General public works	800.0
Disaster relief projects	343.5
Infrastructure	215.0
Non-interest bearing loans	458.0
Small- and medium-scale business programs	41.4
Government procurement	101.1
Economic cooperation	18.3
Subsidies for public housing	179.0
Interest payment from the increase in the national debt	50.5
Other	0.8
Reduction in interest payments	-128.3
Total	2,079.3
Revenue	
Construction bonds	1,360.0
Surplus carried over from FY 1986	403.0
Revenue from sale of NTT shares	458.0
Local governments' contribution to public works	25.3
Funds for the Bank of Japan	-167.0
Total	2,079.3

*Change from the initial general account budget passed in April 1987.

Source: Nihon Keizai Shimbun, June 24, 1987.

The plan to stimulate domestic demand marks at least a temporary end to the fiscal reconstruction program that had reduced government bond issues in each of the past four fiscal years (see Table 2). The supplementary budget raises general account expenditures to Y56.18 trillion ($401.3 billion), up 4.4 percent from the revised fiscal 1986 figure (see JEI Report No. 1B, January 9, 1987). Bond issues will rise to Y11.86 trillion ($84.7 billion), although they will underwrite the smallest proportion of government revenue -- 21.1 percent -- since FY 1975. In addition, the cabinet decided last week to add Y845.2 billion ($6 billion) to the Fiscal Investment and Loan Program, the so-called second budget that is financed primarily by postal savings and public pension funds, raising total FILP expenditures to Y27.93 trillion ($199.5 billion), a 16 percent hike.

Table 2: Public Bond Issues, FY 1980-FY 1987

(in billions of yen, revised general account budget)

FY	Bond Issues*	Dependence**	Outstanding Debt	Percent of GNP
1980	Y14,270	32.7%	Y70,509.8	28.8%
1981	12,900	27.6	82,273.4	31.7
1982	14,345	30.2	86,482.2	35.4
1983	13,790	27.1	109,694.7	38.6
1984	12,865	25.0	121,693.6	40.1
1985	12,438	23.4	134,431.4	41.9
1986	11,495	21.4	145,400.0	43.4
1987	11,861	21.1	n.a.	n.a.

*Includes both construction and deficit-financing bonds.
**As percent of total revenues.

Source: Ministry of Finance

The supplementary budget provides Y1.36 trillion ($9.7 billion) in additional public works spending and Y179 billion ($1.3 billion) in subsidies for public housing. Extra funds are also earmarked for foreign aid, including $100 million in untied loans for African countries. Moreover, Tokyo plans to purchase an additional $1 billion worth of foreign products, including two long-range passenger planes, two supercomputers, five rescue planes and 13 helicopters. This will sharply increase government purchases of foreign goods, which totaled Y39.4 billion ($281 million) in the October 1985-September 1986 period.

Japanese officials believe the economic stimulus package will enable the economy to reach the government's outlook of 3.5 percent real growth in FY 1987. Private analysts, however, are generally less optimistic. Sumitomo Bank, for example, thinks that the package will boost growth 1.1 percentage points to 2.9 percent and doubt that its effect on the trade imbalance will be as great as many expect. Another recent report by the Bank of Japan estimates that a Y3 trillion ($21.4 billion) increase in government spending will reduce the country's trade surplus by $1.5 billion over two years, while cutting the U.S. trade deficit by less than $1 billion.

Randall S. Jones

Kuranari Pledges New Aid Package For ASEAN Nations

During a three-day mid-June visit to Singapore to attend the conference of foreign ministers of the Association of Southeast Asian Nations, Foreign Minister Tadashi Kuranari promised ASEAN a new aid package. In honor of the organization's twentieth anniversary and in response to growing demands by the groups members, Tokyo will offer an assistance fund "of substantial proportions" at the group's summit meeting in Manila this December.

Few of the specifics have been divulged yet, mainly because Japanese officials want to respond to ASEAN requests. Before the December meeting Tokyo study the issue. This approach, it hopes, will give the proposal a better chance of passage when the group meets next year. The United States, however, remains opposed to all forms of whaling and is in possession of considerable leverage because it controls access to this country's rich coastal fishing grounds.

Tatsuo Saito, the Japanese IWC commissioner, said he was "disappointed at the decisions taken" at the meeting. Charging that "there is a constant vote against Japan, even by members who have never attended" the scientific committee meetings, Mr. Saito resigned from the IWC after the stinging votes. It is not clear if Tokyo will appoint another representative; to date there has been no formal reaction from the United States. Japan's official withdrawal from the commission could set off wide aftershocks, especially if Tokyo allows its fishermen to begin unrestricted whaling. Although this is unlikely, Mr. Saito's resignation does not improve the atmosphere for either the salmon fishing case or industry-wide fishing negotiations.

Jon Choy

Japan's Foreign Direct Investment Takes Off

Japanese foreign direct investment has been on an exponential growth track since March 1975, doubling every four years, most recently from $53.1 billion in March 1983 to $106 billion this past March. Staying on course will obviously be harder from here on, but if FY 1986 trends are any indication, overseas equity holdings should double again by March 1991. Japanese businesses invested a record-shattering $22.3 billion abroad in the April 1986-March 1987 period after adding $12.2 billion to their foreign direct investment position in FY 1985 and $10.2 billion in the previous fiscal year. The 23.2 percent appreciation of the yen against the dollar over the course of FY 1986 certainly made it less expensive for Japanese companies to put money into offshore business activities, but almost every other factor corporate planners weigh in considering foreign investment also signaled go.

However weak, the ongoing U.S. economic expansion and market conditions in other areas of the world exerted an enormous pull on Japanese manufacturers hobbled by the yen-triggered erosion of export competitiveness. At the same time protectionism in the United States and Europe, whether threatened or real, and the need for lower cost sources of supply gave export-oriented companies an extra incentive to invest in overseas production facilities. For service firms hemmed in at home by sluggish growth and limited opportunities for diversification, eased foreign investment regulations and the higher returns available abroad in such areas as real estate worked hand-in-hand to swell the outflow of direct investment funds.

The United States remained the prime location for Japanese foreign direct investment in FY 1986, attracting a whopping $10.2 billion. While this figure was nearly twice FY 1985's then-record tally, Japanese companies again earmarked about one-fifth of their outlays -- or approximately $2.1 billion -- for the construction or acquisition of U.S. production and assembly facilities. Roughly $1 billion of this money went into plants to make industrial and consumer electronics products and nonelectric machinery, with most of the rest spread almost equally among automotive equipment, chemicals and metals.

Table 1: Japan's Foreign Direct Investment by Country, FY 1982-FY 1986

(in millions of dollars)

	FY 1982	FY 1983	FY 1984	FY 1985	FY 1986	Cumulative March 31, 1987
United States	$2,738	$2,565	$3,360	$5,395	$10,165	$35,455
Canada	167	136	184	100	276	1,951
North America	2,905	2,701	3,544	5,495	10,441	37,406
Panama	722	1,223	1,671	1,533	2,401	8,841
Brazil	322	410	318	314	270	4,857
Mexico	143	121	56	101	226	1,556
Caymans	6	1	1	132	930	1,279
Bahamas	---	1	97	298	792	1,247
Peru	185	---	6	10	---	696
Bermuda	5	14	29	148	16	617
Latin America	1,503	1,878	2,290	2,616	4,737	20,373
Indonesia	410	374	374	408	250	8,673
Hong Kong	400	563	412	131	502	3,433
Singapore	180	322	225	339	302	2,571
Korea	103	129	107	134	436	2,118
Malaysia	83	140	142	79	158	1,283
Taiwan	55	103	65	114	291	1,051
Philippines	34	65	46	61	21	913
Thailand	94	72	119	48	124	884
China	---	---	114	100	226	513
Asia	1,384	1,847	1,628	1,435	2,327	21,790
Kuwait	41	66	55	34	41	1,309
Iran	0	1	0	0	---	1,003
Middle East	124	175	273	45	44	3,016
United Kingdom	176	153	318	375	984	4,125
Netherlands	73	113	452	613	651	2,337
Luxembourg	127	265	315	300	1,092	2,308
West Germany	194	117	245	172	210	1,552
France	102	93	117	67	152	970
Belgium	64	126	71	84	50	793
Switzerland	79	37	229	60	91	753
Spain	19	52	140	91	86	601
Europe	876	990	1,937	1,930	3,469	14,471
Liberia	434	323	281	159	289	2,744
Africa	489	364	326	172	309	3,678
Australia	370	166	105	468	881	4,502
Oceania	421	191	157	525	992	5,234
Total	7,703	8,145	10,155	12,217	22,320	105,970

Source: Ministry of Finance

Table 2: Japan's Foreign Direct Investment by Sector, FY 1982-FY 1986

(in millions of dollars)

	FY 1982	FY 1983	FY 1984	FY 1985	FY 1986	Cumulative March 31, 1987
Manufacturing Sector	$2,076	$2,588	$2,505	$2,352	$3,806	$28,206
Food Products	78	77	118	90	127	1,218
Textiles	67	174	85	28	63	2,146
Wood Products	76	91	115	15	57	1,178
Chemicals	322	450	223	133	355	4,337
Metals	468	479	718	385	328	5,518
Nonelectric Machinery	164	169	185	352	626	2,597
Electric Machinery	267	502	409	513	987	4,734
Transport Equipment	439	486	437	627	828	4,201
Other	195	160	215	208	435	2,276
Nonmanufacturing Sector	5,478	5,357	7,429	9,536	17,949	74,285
Agriculture/ Forestry	40	18	26	12	15	795
Fisheries	22	17	24	42	52	494
Mining	685	382	484	598	669	12,424
Construction	44	55	112	94	250	1,047
Trade/Sales	1,899	1,164	1,482	1,550	1,861	14,538
Banking/Finance/ Insurance	533	1,167	2,085	3,805	7,240	18,099
Services	702	622	681	665	1,560	6,246
Transportation	924	1,363	1,651	1,240	1,925	7,826
Real Estate	354	375	430	1,207	3,997	6,531
Other	276	193	454	322	379	6,285
Branch Offices	149	200	221	329	566	2,884
Real Estate Transactions*	---	---	---	---	---	595
Total	7,703	8,145	10,155	12,217	22,320	105,970

*Overseas real estate transactions have been excluded from Japan's foreign direct investment data since December 1, 1980 because of changes in the Foreign Exchange and Foreign Trade Control Law.

Source: Ministry of Finance

Japanese corporations also continued to expand their presence in the American banking, finance and insurance sector, investing an estimated $2 billion. Another $1 billion or so was channeled into the U.S. sales organizations of Japanese companies. What set FY 1986 apart from earlier periods, though, was that Japanese investors put more money into American real estate -- some $3.6 billion worth -- than in any other sector of this country's economy.

In adding $3.5 billion to their equity holdings in Europe during the 12 months through March 1987, Japanese businesses also came close to doubling their FY 1985 investments in this area of the world. Financial institutions remained the major players, putting another $2.3 billion into banking, finance and insurance subsidiaries and affiliates. More money was invested in European production facilities, but the $0.4 billion addition paled in comparison with the amount going into the U.S. manufacturing sector. Europe and the United States were on a more equal footing in terms of the expansion of commercial enterprises since Japanese distributors invested $0.4 billion in European sales organizations.

While Japanese foreign direct investment in FY 1986 continued to be skewed toward the United States, Europe and other industrial countries, a bigger volume of capital did flow into the economies of Latin America and Asia. At $4.7 billion, in fact, Japanese investment in Latin America was almost twice as large as FY 1985's total. The transportation industry remained a magnet, attracting $1.5 billion-plus, mainly to Panama, but this time around the financial industry was the main draw as businesses in Japan invested $2.5 billion in such tax havens as the Caymans, the Bahamas and Panama. Japanese corporations continued to pursue a more diversified investment strategy in Asia. One-third of the $2.3 billion invested in this region during the April 1986-March 1987 period went into production facilities, particularly for electronics, with the rest divided among the services, financial, mining and commercial sectors.

The huge flow of funds going into the United States during FY 1986 reinforced North America's position as the top location for Japanese foreign direct investment. As of March 1987 businesses had a $37.4 billion equity stake in this country and Canada. The biggest block of money -- $9.9 billion -- was in the manufacturing sector, with about one-fourth of this total in electronics companies. The commercial sector, the top draw until FY 1985, ran a distant second at $8.5 billion. Moreover, it could slip another notch or two in the rankings this year if FY 1986's investment pattern is repeated since banks and other financial institutions already had $6.3 billion invested in North America at the end of March 1987 while Japanese real estate holdings were valued at $5.8 billion.

Asia, the leading offshore investment site for Japanese corporations through March 1983, managed to retain the number-two spot with a $21.8 billion total at the end of FY 1986, but its hold was tenuous since investors had equity interests of $20.4 billion in Latin America. Of the amount invested in Asia, $8.3 billion was in metals, chemicals, textiles, electronics and other manufacturing operations and $6.4 billion was in mining. In Latin America, though, transportation services were the top investment sector with a March 1987 total of $6.1 billion, followed by manufacturing ($4.8 billion) and banking ($4.3 billion).

With a record $3.8 billion going into overseas production facilities during FY 1986, manufacturing continued to represent the leading edge of Japanese foreign direct investment activity. By March 1987 Japanese corporations had channeled $28.2 billion into production facilities abroad, including $9.9 billion in North America and $8.3 billion in Asia. Thanks to FY 1986's unprecedented $7.2 billion addition, the financial sector moved up two positions in the rankings to the number-two position with a cumulative total of $18.1 billion. This amount was divided roughly in thirds among North America ($6.3 billion), Europe ($6 billion) and the rest of the world anchored by Latin America ($4.3 billion). The third-largest concentration of Japanese equity funds was in overseas sales operations, where businesses had a March 1987 stake of $14.5 billion, three-fifths of which was in the United States and Canada. Holding down fourth place was mining, with the $12.4 billion total as of last March split almost evenly between Asian countries, mainly Indonesia, and the rest of the world.

Susan MacKnight

Notes

Senate Trade Bill - True to his word, Senate Majority Leader Robert Byrd (D, W.Va.) extended floor consideration of the trade bill (S 1420) during the week of June 22 to a Saturday session. Having said that the bill should be completed before the July 4 recess, Sen. Byrd had to concede that this would not be possible -- especially after three days of floor debate produced few results. Most of the debate focused on political issues rather than the trade-specific amendments that most observers believe will be the meat of the debate. Even the Saturday session became a lengthy debate on the question of a balanced budget amendment rather than trade law.

Still, there was some movement. Most significant was an unsuccessful attempt by Sen. Arlen Specter (R, Pa.) to allow firms to sue for dumping damages in the courts. The amendment failed by a vote of 69-27; some observers had been concerned that passage of this proposal would set a dangerous (and protectionist) precedent. Much of the substantive work, however, is expected to be done during the week of June 29 and immediately following the July 4 recess.

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REPORT

NO. 26A July 10, 1987

THE JAPANESE ECONOMY IN 1986

Summary

Overall Japanese growth in 1986 was the lowest recorded since 1974 as the economy struggled to advance under the weight of an appreciated yen. Echoes of the strong yen reverberated in the external sector, where a contraction detracted from growth for three-fourths of the year. Nevertheless, Japan scored another record trade surplus, much to the ire of its trading partners, largely as a result of the so-called J-curve effect. Mirroring this development, capital outflows continued at a torrential rate, triggering a mild backlash as Japanese investors and financial institutions suddenly acquired significant market power. Although Tokyo was buffeted by these developments, some of which were of its own making, officials were hard-pressed to keep the economy growing with their fiscal-policy hands tied.

Overview of GNP Growth

Japan's 1986 total output of final goods and services increased by just 2.5 percent in inflation-adjusted terms, disappointing Tokyo and its trading partners. The performance was a shadow of the previous year's 4.7 percent expansion, and Tokyo pointed to the yen's rise against the dollar as the primary reason for the modest showing. In fact, for the first time in several years, the external sector detracted from economic growth (see Table 1). Nevertheless, the Japanese economy kept pace with its cross-Pacific rival, the United States.

Overall economic output on a quarterly basis revealed the resiliency of the economy. A 3 percent-plus rate of growth in the second, third and fourth quarters was weakened by a disastrous first-quarter contraction, the first since 1975. A sharp drop in exports combined with weak capital investment and consumer spending accounted for the negative figure.

The growth recession certainly took the Economic Planning Agency by surprise. It was clear that the agency's 4 percent real growth forecast for fiscal 1986 was overly optimistic by the end of calendar 1986. In fact, officials incorrectly forecast the behavior of every major component, an indication of the breadth and depth of the strong yen's impact.

Personal Consumption - Erratic is the only way to describe Japan's household consumption last year. After a weak start in the first quarter, consumers went on a spending binge for the next six months, encouraged by stable or declining prices on domestic and imported goods. As the impact of the yen's rapid appreciation dimmed the business outlook, however, consumers developed cold feet and spending contracted in the last quarter of the year. While this sector's share of GNP was unchanged from the previous year's 55.8 percent, the boom-and-bust pattern did yield slightly better overall growth.

The mixed performance reflected several conflicting factors. While average wages rose 3.5 percent and second incomes also grew, overtime hours declined and disposable income inched up only 1.6 percent. Combined with a 0.6 percent rise in consumer prices, real incomes rose only 1 percent, just half of 1985's gain.

There were no significant changes in spending patterns; the share of monthly outlays for food (the largest expense at over one-fourth of the total), housing, utilities; consumer goods and services remained steady. Underlying this stability was a complex balance. Consumption of fish was down but meat purchases rose, consumers also bought more fruits and vegetables. At the same time, people spent more of their income on eating out, the biggest component of food expenditures in both 1985 and 1986. The cost of education and housing continued to go up, but this was balanced by declines in the costs of most types of energy. While shoppers did benefit somewhat from the yen's appreciation, it was clear that they are reaping only a small percentage of the potential benefits.

Private Residential Construction - This component of GNP put on a surprisingly strong performance in 1986. After recording a strong 6.3 percent annualized growth rate in the first quarter, growth more than doubled in each of the next two periods before falling back. The double-digit gain in 1986 had been seen only once before in the post-OPEC era, when 10 percent growth was recorded in 1978. New housing starts rose 10.4 percent to 1,364,609 units with an average floor space of 81.3 square meters, continuing the trend toward smaller houses (the average size in 1985 was 83.4 square meters). Indicating that home ownership is getting farther out of the reach of the average consumer, the number of rental units rose an impressive 22.5 percent to 645,886, while owner-occupied units grew just 2.7 percent to 477,050 units and units built for sale dropped 1.7 percent to 220,155 units.

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Table 1: Japan's Real Gross National Product at Constant (1980) Prices

(in billions of yen, seasonally adjusted, quarterly totals and rates of growth at annual rates)

	1985	1986	January-March 1986	April-June 1986	July-September 1986	October-December 1986
Gross National Product	Y291,207.0 (4.7%)	Y298,346.6 (2.5%)	Y294,483.4 (-1.7%)	Y297,230.1 (3.8%)	Y299,438.0 (3.0%)	Y301,619.4 (2.9%)
Personal Consumption Spending	162,103.4 (2.6%)	166,478.9 (2.7%)	164,123.7 (1.6%)	166,134.2 (5.0%)	168,282.5 (5.3%)	167,048.0 (-2.9%)
Private Residential Construction	14,002.1 (2.6%)	15,418.1 (10.1%)	14,340.6 (6.3%)	14,808.5 (13.7%)	15,851.9 (31.3%)	16,625.4 (21.0%)
Private Fixed Nonresidential Investment	52,224.7 (12.3%)	55,578.4 (6.4%)	54,983.4 (1.3%)	55,204.3 (1.6%)	55,471.9 (2.0%)	56,617.8 (8.5%)
Change in Business Inventories	2,273.1 (62.1%)	1,136.5 (-50.0%)	1,726.5 (-60.1%)	639.5 (-98.1%)	920.4 (329.1%)	1,351.4 (364.8%)
Government Current Expenditures	27,072.8 (2.0%)	28,868.3 (6.6%)	27,606.7 (3.5%)	27,719.2 (1.6%)	28,058.0 (5.0%)	32,065.4 (70.6%)
Government Fixed Investment	20,935.6 (-6.6%)	21,858.9 (4.4%)	21,022.4 (1.2%)	21,785.4 (15.3%)	22,180.2 (7.4%)	22,428.9 (4.6%)
Change in Government Inventories	302.2 (*)	808.5 (*)	39.6 (*)	3,251.8 (*)	1,795.1 (*)	-1,866.9 (*)
Net External Sector	12,293.1 (29.8%)	8,198.9 (-33.3%)	10,640.6 (-42.8%)	7,687.2 (-72.8%)	6,878.0 (-35.9%)	7,349.4 (30.4%)
Exports of Goods and Services and Factor Income Received	55,133.4 (5.3%)	52,471.5 (-4.8%)	52,208.9 (-12.4%)	53,044.1 (6.6%)	52,640.0 (-3.0%)	52,127.4 (-3.8%)
Imports of Goods and Services and Factor Income Paid	42,840.3 (-0.1%)	44,272.6 (3.3%)	41,568.3 (-1.6%)	45,356.9 (41.8%)	45,762.0 (3.6%)	44,778.0 (-8.3%)

*Cannot be calculated or meaningless.

Source: Economic Planning Agency

There seemed to be two sources driving the boom: the increased availability of subsidized loans for home buyers and a reevaluation of loan policies by private lenders. The number of new loans extended by the government Housing Loan Corp. increased by 3.8 percent to 440,000 valued at Y3,154.6 billion ($22.5 billion at Y140=$1.00). The 14.1 percent increase in the loan value stemmed from Tokyo's October 1985 decision to increase HLC funds. Moreover, changes in tax laws and skyrocketing land values encouraged increased activity by private lenders. Lending by mutual savings and loan banks jumped 20 percent in quantity and 15.1 percent in value, while credit association loan volume grew 11.2 percent for a 16.7 percent rise in value. In an interesting twist, financial institutions specializing in housing loans issued 7.3 percent fewer loans, but the value of those loans mushroomed by 72.6 percent. The general rise in housing prices may explain some of this phenomenon, but it is more likely that these companies were targeting the high end of the market.

Private Nonresidential Construction - The expansion of capital investment finally cooled in 1986 to 6.4 percent after 1985's blistering 12.3 percent real increase. This second-largest component of GNP was hammered by the strong yen, as growth in the first nine months of the year registered a weak 2 percent or less in the face of postponed expansion plans. Plant and equipment expenditures finally recovered somewhat in the last quarter as the adjustment process moved into full swing.

As shown in Table 2, the growth of investment by all industries fell to just one-sixth of the previous year's pace. All but four manufacturing industries reduced capital spending, with electric and nonelectric machinery leading the way. Interestingly, investment by the automotive sector advanced, although last year's gain paled in comparison to the huge increase of 1985. The nonmanufacturing sector clearly contributed the lion's share of investment growth, with only three of these 11 industries showing declines. The drop in mining signaled the beginning of the end for this sector; most mining companies have announced very severe cuts in output and employment. On the other hand, the jump in investments by large retailers revealed expectations of greater consumer spending, while greater outlays by transportation and communications industries indicated the positive effects of deregulation. The statistics also showed how unevenly the burden of the stronger yen was distributed: export-oriented areas cut back as overseas revenues fell, while those businesses serving domestic demand continued to spend on new facilities.

Change in Business Inventories - The unusually large swings in this component reflected the difficulties businesses experienced as the appreciating yen soured export markets and then depressed domestic demand. The industrial operating rate drifted down in 1986, averaging 5 percent less in the fourth quarter than in the first three months of the year.

Public Sector - After four years of negligible expansion, government spending made a strong contribution to overall growth in 1986, accounting for 1.1 percentage points of the 2.5 percent increase in real growth. As usual there was a slight bulge in current expenditures in the first quarter due to the adoption of the supplementary budget for FY 1985. But more interesting was the upward trend during the latter half of the year. Tokyo seemed to be responding to the economic slump by loosening its purse strings -- revealing a partial return to Keynesian methods. Fixed investment made its first positive

Table 2: Capital Investment by Sector, FY 1985-FY 1986

(in billions of yen; percent change)

	FY 1985 (Actual)		FY 1986 (Estimated)	
All Industries	Y23,659.8	7.9%	Y23,973.2	1.3%
All Manufacturing	10,672.3	7.9	9,945.2	-6.8
Foods	628.7	7.7	699.7	11.3
Textiles	203.6	3.8	197.5	-3.0
Paper and Pulp	455.9	23.8	424.1	-7.0
Chemicals	1,420.3	10.8	1,350.5	-4.9
Oil and Coal	295.5	7.5	298.9	1.2
Rubber and Leather	175.5	8.9	158.9	-9.5
Glass and Stone Products	447.4	8.5	390.7	-12.7
Steel	833.8	3.0	801.1	-3.9
Nonferrous Metals	320.8	10.6	281.2	-12.3
Metal Products	304.3	8.6	288.6	-5.2
Nonelectric Machinery	569.1	6.2	433.4	-23.8
Electric Machinery	2,372.4	-7.0	2,098.4	-11.5
Transportation Machinery	1,707.6	35.7	1,654.0	-3.1
Cars and Trucks	1,398.5	46.5	1,423.0	1.8
Ships	65.4	17.2	59.1	-9.7
Other	243.7	-1.9	171.9	-29.4
Precision Machinery	324.4	13.4	272.2	-16.1
Printing and Publishing	323.0	2.7	371.7	15.1
Other Manufacturing	290.0	2.7	224.6	-22.6
All Nonmanufacturing	12,987.5	7.9	14,027.9	8.0
Agriculture	34.9	38.2	35.8	2.7
Mining	172.3	-25.7	92.2	-46.5
Construction	278.0	-12.8	313.8	12.9
Wholesaling and Retailing	1,358.0	7.2	1,450.2	6.8
Wholesaling	627.2	3.1	708.2	12.9
Large Retailers	296.1	12.1	330.8	11.7
Other Retailers	434.6	10.1	411.1	-5.4
Finance and Insurance	567.0	-0.8	668.7	17.9
Real Estate	1,151.4	14.4	1,114.8	-3.2
Transportation and Communications	1,584.3	12.6	1,678.8	6.0
Private Railways	351.1	9.4	427.9	21.8
Ground Transportation	444.1	34.2	390.1	-12.2
Shipping	292.5	-8.3	297.6	1.8
Other	496.5	13.7	563.3	13.5
Electric Power	3,072.0	0.9	3,545.2	15.4
Gas	290.8	8.0	322.0	10.7
Services	1,128.6	21.9	959.3	-15.0
Leasing	3,350.3	12.6	3,847.0	14.8

Source: Economic Planning Agency

showing in four years, pointing to the long-term effects of looser fiscal policy. Finally, the huge leap in government inventories in the second quarter was due to the Finance Ministry's massive purchases of gold to mint a commemorative coin. This one-time event had a brief and minimal impact on growth.

Net External Sector - Nowhere was the deflationary effect of the strong yen more clearly shown than in these figures. After years of serving as a major prop for growth, the external sector was a drag on the economy in 1986. The gains of 1985 were completely erased and more as a decline in exports and an increase in imports rocked the economy. Net exports went into a free-fall for the first three quarters before recovering ground in the last period as the value of exports and imports gyrated in response to the volatile yen-dollar exchange rate. All told, the external sector knocked 1.4 points off the overall real GNP growth rate, dropping it from a respectable 3.9 percent to a disappointing 2.5 percent.

While values fluctuated wildly, the volume of trade remained fairly steady. Japan continued to enjoy the benefits of depressed global prices for energy and other commodities while its manufacturers struggled to hold on to foreign market shares. Japan's struggle to retain international industrial competitiveness in the face of the shifting comparative advantage wrought by the appreciating yen is revealed by an analysis of microeconomic factors.

Labor and Inflation

Employment grew 0.8 percent in 1986, a poor showing compared to the 2.6 percent increase in the United States. The role of women in the workplace continued to expand: female employment was up 1 percent, while the increase for males was just 0.7 percent. Unemployment hit a record 2.8 percent, up from 1985's 2.6 percent level; moreover, for four months levels were at a then all-time-high of 2.9 percent. Although only 1.6 percent of men were counted as unemployed, the number of unemployed women continued to edge upward, reaching 1.13 percent as opposed to 1.06 percent in 1985.

The process of change in the labor market that started in the early 1980s as the economy entered the post-industrial phase accelerated under the stress of the yen's appreciation. Cracks in the lifetime employment system began to widen as firms sought to streamline operations and cut unprofitable business lines. The second-tier labor market, which never offered lifetime employment, also showed signs of becoming saturated. The downturn seemed to be so sharp and arrived so quickly that the growth of part-time workers nearly ground to a halt, increasing a bare 0.6 percent compared with 1985's 2.9 percent. Firms did not have time to adjust employment by attrition and found few openings to shift workers to other divisions, subsidiaries or subcontractors. Forced to make do with what they had, most apparently turned away part-time employment seekers.

As manufacturing firms adjusted output, overall productivity rose by a lackluster 2.2 percent, well below 1985's 4.2 percent performance. Only three industries -- lumber and wood products (13.2 percent), pulp and paper (5.6 percent) and electric machinery (4.7 percent) -- showed gains above 3 percent. Productivity in the nonelectric machinery sector actually declined 5.2 percent, while transportation equipment workers eked out a 0.1 percent gain.

For a change, wage increases outpaced productivity gains. Except for the three above-mentioned sectors, pay raises in manufacturing were above (sometimes well above) respective productivity gains. Even so, the 2.4 percent average wage gain fell short of the previous year's 4 percent increase. In effect, almost everyone was worse off: competitiveness was damaged and workers received smaller wage increases.

Inflation continued to be a bright spot in the picture. Domestic wholesale prices actually declined by 4.8 percent, pulled down by a 4.9 percent drop in the cost of manufactured goods, a 4.4 percent cut in the cost of energy, a 1.7 percent reduction in the prices of mining products and a 1.1 percent fall in agricultural prices.

An average 14.5 percent cut in yen export prices reflected Japanese efforts to hold on to foreign markets. Price cuts of 28 percent and 22.7 percent indicated how tough international competition was in the chemical and the metals and metal products markets, respectively. Even in areas of strength, such as electric machinery (a 14.1 percent drop), transport equipment (down 9.8 percent) and nonelectric and precision machinery (off 9.3 percent), Japanese exporters were forced to accept lower prices. On the other side of the coin, however, import prices fell even more sharply, contracting by an average 34.7 percent. Petroleum and natural gas prices were down 43.1 percent, food prices were off 26.6 percent, and the cost of imported machinery and equipment declined 21 percent. The combined effect was a 9.4 percent decline in the overall wholesale price index.

Consumers were also blessed with steady prices as inflation subsided to 0.6 percent, well below 1985's already low 2 percent mark. Prices for meat, fruits, vegetables, energy and particular durable and nondurable goods showed declines. Of those items increasing in price, education (3.6 percent), housing (2.5 percent) and medical care (1.9 percent) led the way by a considerable margin.

Production and Profits

As might be expected, production and profit figures for Japanese manufacturers did not present a pretty picture. After jumping during the 1983-85 expansion, production was down 0.3 percent in 1986. The output of final demand goods rose 0.6 percent, however, as production of investment goods expanded 0.4 percent (an 0.8 percent rise in capital goods outweighed a 0.7 percent drop in construction materials) and consumer goods output increased 0.8 percent (nondurables rose 1.1 percent while durables went up 0.2 percent). On an industry basis, only electric machinery (6 percent), precision equipment (4.6 percent), chemicals (0.4 percent), pulp and paper (2.9 percent) and food products (0.9 percent) showed increases. The sharpest drop in output appeared in the nonelectric machinery industry (7 percent), followed by steel (6 percent).

Because companies use different fiscal years for accounting purposes, the profit picture is always somewhat confused. According to the Ministry of Finance, however, sales by incorporated businesses declined by 0.1 percent in the first three quarters of 1986 over the year-earlier period, resulting in a 5.4 percent drop in profits (see Table 3). The manufacturing sector was particularly hard-hit, as sales plunged 34.8 percent and profits plummeted 24.7 percent. In fact, the only increase in both indicators was in paper and pulp, where profits rose 32.3 percent on a 3.6 percent increase in sales. Nonmanufacturing industries fared much better. The construction industry recorded a much-needed 39.5 percent increase in profits on a 13.7 percent jump in sales. Interestingly, electric utilities managed to reap a 14.9 percent profit gain despite an 8.2 percent drop in sales. Similarly, gas and water companies' revenues declined (4.7 percent) but profits rose (36.5 percent). A significant portion of the benefits of a strong yen and cheap oil obviously were not passed on to domestic consumers, despite government-mandated rate cuts and rebates.

Table 3: Business Results of Japanese Companies, January-September 1986

(in billions of yen and percent change over year-earlier period)

	Sales		Profits	
Incorporated Firms				
Construction	Y49,810	13.7%	Y1,541	39.5%
Agriculture	2,340	-14.1	75	-25.7
All Manufacturing	146,274	-34.8	7,557	-24.7
Mining	1,661	-32.8	54	-83.1
Textiles	7,409	-2.3	245	-7.5
Steel	10,221	-15.6	108	-80.3
Paper and Pulp	6,150	3.6	348	32.3
Nonferrous Metal Products	5,878	-17.1	156	-15.7
Chemicals	19,835	-13.8	1,322	-9.7
Fabricated Metal Products	10,350	2.3	491	-7.5
Nonelectric Machinery	13,746	-3.0	537	-24.7
Precision Machinery	4,526	-6.2	160	-45.4
Shipbuilding	3,347	-11.6	86	-3.4
Transportation Equipment	25,623	-5.7	584	-50.6
Wholesale Trade	249,771	0.6	2,695	4.9
Retail Trade	51,237	12.5	1,020	4.7
Electric Utilities	9,319	-8.2	2,082	14.9
Gas and Water	1,455	-4.7	172	36.5
Real Estate	13,130	23.6	1,639	47.4
Transportation and Communications	27,122	4.0	1,942	10.3
Services	30,052	10.7	1,495	-0.8
All Industries	642,172	-0.1	20,273	-5.4
Unincorporated Firms				
Manufacturing	12,752	-9.9	4,218	-13.7
Wholesale and Retail	16,637	-7.3	11,220	-7.2
Services	5,565	7.5	1,078	24.5

Source: Ministry of Finance

Monetary Policy

All semblance of a steady monetary policy was dropped in 1986 as the Bank of Japan lowered the official discount rate by 0.5 percentage point four times -- January 29, March 7, April 7 and October 31. This left the most basic lending rate at an all-time-low 3 percent at the end of the year. Commercial loan and savings rates were also reduced (see Table 4). The basic reason for these cuts was to stabilize the volatile yen-dollar exchange rate and counteract the negative effects of a stronger yen. However, the three cuts in 1986's first four months accomplished little. In fact, they may have added to the perception of volatility. The yen continued to rise steadily until it hit a high of Y152.55 to the dollar on August 20 before falling back to the Y160 level for the remainder of the year.

Table 4: Japanese Interest Rates, 1986

(in percent per annum)

	January 1, 1986	December 31, 1986
Postal Savings System		
Ordinary Savings	2.88%	1.68%
Installment Savings	3.72	2.64
Fixed Amount Savings		
Six months or more	4.00	2.26
One year or more	4.50	2.76
One-and-a-half years or more	5.25	3.51
Two years or more	5.50	3.86
Two and one-half to three years	5.65	3.91
Three years or more	5.75	4.01
Ten years or more	n.a.	4.87
Time Deposit Savings		
Six months	4.75	3.01
One year	5.50	3.76
Commercial Savings Rates		
Time Deposit		
Three months	3.50	1.76
Six months	4.75	3.01
One year	5.50	3.76
Two years	5.75	4.01
Installment Savings	3.40	2.28
Deposits for Tax Payments	2.25	1.01
Ordinary Deposits	1.50	0.26
Notice Deposits	1.75	0.51
Special and Other Deposits	1.50	0.26

Source: Bank of Japan

Money Supply - This item (M2 + CDs, average outstanding amount) rose 8.7 percent, only slightly higher than the 8.4 percent mark of the previous year. In late 1985 and early 1986 Bank of Japan officials were concerned that monetary growth was getting out of hand since expansion rates of 9 percent were recorded for the last quarter of 1985 and the first quarter of 1986. There was some relief as the rate fell below 9 percent for the remainder of 1986, although it still outstripped the pace of real economic growth, raising fears of renewed inflation. These fears turned out to be premature as consumer prices edged up and producer prices actually declined.

The absence of stagflation was perplexing since the expansion of most domestic demand components was equal to or below the previous year's (except for housing construction). A breakdown of money supply growth by source sheds some light. While currency in circulation expanded at a heated 11.9 percent pace (more than double the previous year's 5.8 percent level), deposits (9.8 percent) and quasi-money (8.8 percent) also grew quickly. Since cash represents only about 8 percent of the money supply, much of the increased money supply was not spent on goods. Deposits by businesses grew 11.2 percent (compared to 0.3 percent growth in 1985), a trend echoed by individual deposits, which rose 10.6 percent versus 5.6 percent. The hectic expansion of quasi-money (such as money market certificates) slowed in 1986, falling from 11.5 percent; corporations and individuals upped their holdings by 12.2 percent and 6.8 percent compared with 1985 growth rates of 17 percent and 7.8 percent, respectively. Finally, certificates of deposit also grew at a faster rate -- 5.5 percent versus 2.9 percent.

Financial Deregulation - Spurring this movement into non-cash holdings was the Finance Ministry's continuing program of financial deregulation:

- Deregulation of interest rates on deposits took two steps in 1986. On April 1 MOF lowered the minimum size of large time deposits that offer non-regulated rates of interest from Y1 billion ($7.1 million) to Y500 million ($3.6 million). This floor was lowered again on September 1 to Y300 million ($2.1 million). Maturities were unchanged at 3 to 24 months.

- MOF also permitted banks to expand offerings of money market certificates and certificates of deposit. On April 1 banks were allowed to issue instruments worth up to 200 percent of shareholders' equity, a one-third increase. This ceiling was raised again on September 11 to 250 percent. At the same time, the maximum maturity for MMCs and CDs was increased from 6 months to 12 months at the start of fiscal 1986. While the minimum size of a CD remained fixed at Y100 million ($714,286), the minimum size for MMCs was lowered from Y50 million ($357,143) to Y30 million ($214,286) on September 11.

- The Tokyo International Banking Facility opened its doors December 1 with much official fanfare but lukewarm commercial interest. After almost a year of planning and discussion, the Tokyo offshore market emerged with more regulations and limitations than its New York or London counterparts. Funds attracted to Tokyo offshore accounts cannot flow into domestic accounts nor can they be used to issue domestic CDs or purchase domestic bonds. In contrast, the London market has no such barriers and the New York market only requires that certain reserve rates be maintained. While all three facilities exempt accounts from withholding taxes, domestic reserve requirements and domestic interest rate regulations, Tokyo accounts still face local and stamp taxes. Nevertheless, the facility grew quickly from its opening day volume of $51 billion to $93 billion by the end of the month and well over the $100 billion mark by the end of January 1987. In short, despite the restrictions (which may eventually be removed), the Tokyo IBF performed very nicely.

- MOF began a campaign to reinvigorate domestic bond markets after its successful deregulation of overseas yen-denominated markets. It urged major Japanese securities firms to begin quoting prices for samurai bonds (yen-denominated bonds issued by a foreign government or international agency) on a daily basis and sought to build a secondary market for the securities to enhance their attraction. Requirements for issuers of samurai and shogun (like samurai bonds but denominated in foreign currencies) bonds were also reduced. MOF considered lowering the requirements for issuing unsecured and convertible bonds to entice more domestic firms to raise money at home. Rules governing secondary sales of bonds and the timing of bond sales were also eased.

MOF also took several steps to prepare Japanese financial institutions for the rigors of global competition:

- New standards for financial ratios were drafted at the start of fiscal 1986. Banks were warned that they must increase their equity to bring their net-worth-to-total-asset ratio to 4 percent -- a much tougher requirement than the previous net-worth-to-deposit ratio of 10 percent. Accounting methods for loan guarantees and loans to subsidiaries were also tightened in response to the Sankyo Steamship Co., Ltd. bankruptcy, which threatened to pull down several of the shipping company's creditor banks.

- The Bank of Japan replaced the three-tiered system of reserve requirements on June 28 with a more complicated method. Although Japanese banks are now grouped into five different categories based on total assets and required to keep varying percentages of time and other deposit assets with the BOJ in interest-free accounts, the overall effect was to lower reserve requirements and increase flexibility.

- The Investment Advisory Act went into effect November 26 in response to a number of scandals. Investment consultants must now provide the Finance Ministry with proof of their financial and business standings to qualify for a basic license. Stricter requirements also apply to a discretionary license, which allows a firm to take actions without first getting the client's approval, although most major domestic and many foreign firms qualify with ease.

In addition, MOF began preparations to regulate the mortgage-backed securities market, which has suffered from fraud and failures. Although the strength of the real estate market has yielded huge returns to some investors, it also allowed unscrupulous operators to remain in business. The government's scrutiny signals the end of free-wheeling deals in this rapidly growing market.

Beside the offshore market, MOF opened other doors to foreign firms. The most significant was an unofficial policy allowing bank-affiliated companies to trade in securities. Citicorp, American Express Bank Ltd., Swiss Banking Corp., Baring Brothers and Dresdner Bank of West Germany were all allowed to open new brokerage subsidiaries or convert existing units into securities firms. The groundwork for expanding the Tokyo Stock Exchange and giving foreign firms a greater role in the Japanese government bond market was also laid in 1986.

Balance of Payments - Despite record trade ($92.8 billion) and current account ($85.9 billion) surpluses, Japan's overall balance of payments deficit nearly quadrupled to $44.8 billion from 1985's $12.3 billion mark. The outflow of long-term capital more than doubled to $131.5 billion and the short-term capital balance also remained in the red at $1.6 billion, easily swamping the impact of the trade surplus. The capital outflow reached such proportions that Tokyo became concerned over the impact on domestic investment. Moreover, a backlash began to develop against the surge of Japanese investments in foreign markets. It was clear that national financial markets were becoming inextricably linked.

Exchange Rates - In a stunning example of these links, the Group of Seven Western industrial nations continued their coordinated program to lower the value of the dollar against the yen and West German mark that began in September 1985. Japan, West Germany and the United States simultaneously lowered their discount rates in March 1986 to encourage the orderly rise of the yen and mark. The yen began the year at an average monthly rate of Y200.05 (as traded on the Tokyo interbank spot market), and rose to Y154.11 in August before falling back to Y162.13 in December. The December-to-December rise of 25 percent topped 1985's gain, straining Japan's export industries and putting fiscal policy on the spot.

Fiscal Policy

Despite the flagging economy, fiscal policy remained handcuffed in 1986. The initial fiscal 1986 general account budget did not increase discretionary spending. An 8 percent increase in debt service and transfers to local governments resulted in a 3 percent rise in overall spending. The fiscal reconstruction program of Prime Minister Yasuhiro Nakasone and the Ministry of Finance remained in force, favoring national defense (6.6 percent) and foreign economic cooperation (6.3 percent) while reducing food price supports (-14.3 percent), education (-0.3 percent) and public works (-2.3 percent).

On the tax side, the news for business was also bad. In order to pay for more generous home-loan regulations and some minor improvements in depreciation allowances, over Y260 billion ($1.9 billion) worth of tax deductions or credits were eliminated. The suspension of the carryover of losses was particularly painful given existing business conditions. In part because of an increase in tobacco excise taxes, tax and stamp revenues were projected to increase by Y2 trillion ($14.3 billion).

The growth of the Fiscal Investment and Loan program, a self-funding second budget, was positive in FY 1986, with a 6.2 percent increase slated. Spending hikes of 10 percent-plus were planned in housing, water works, roads, transportation and communications, and regional development programs. It was clear that FILP expenditures were boosted in an attempt to counteract the deflationary effects of no growth in discretionary general account outlays.

Even as late as the end of 1986, fiscal austerity remained in vogue. The supplementary budget for FY 1986 actually cut overall expenditures by Y263.8 billion ($1.9 billion). This was slightly misleading, however, as the emphasis was on increased public works spending and government employee wage hikes, while reductions took the form of savings generated by lower oil prices and the stronger yen. Nevertheless, the overall figures held little promise of immediate stimulus. Neither did the reflationary packages announced by the government in April and September. The reliance on the private sector and the long-term emphasis of the packages nullified any immediate impact they might have had.

In spite of this fiscal quiescence, foundations for important policy changes were being laid. Of greatest note were preparations for the most wide-ranging tax reform program in over two decades. The general outline was set by the end of the year and included reductions in personal and corporate income tax rates, a restructuring of personal income tax brackets, elimination of the popular tax-exempt small savings accounts, changes in commodity and excise taxes, and stronger enforcement. The proposal was highly controversial, particularly the idea of a 5 percent value-added tax, because the prime minister had promised during the 1986 lower house election campaign not to institute a large-scale indirect tax. The tax issue would take on major political dimensions in 1987.

Also of great importance were preparations to privatize the biggest government-owned corporation: Japanese National Railways. The size of JNR's assets, debts and employment presented a Herculean task for administrative reformers. Encouraged by the success of two previously privatized public corporations, Nippon Telegraph and Telephone Corp. and Japan Tobacco Inc., plans were laid to split JNR into several regional passenger rail companies, a cargo company, a holding company and two non-rail operating firms.

Conclusion

Tokyo's efforts to get the economy back on a steady growth track were derailed in 1986 as the strong yen proved a major obstacle. Hampered by its adherence to fiscal austerity, Tokyo was slow to respond. Monetary policy alone was available to deal with both the economic recession and the yen-dollar exchange rate, yet it is almost an axiom that the number of tools required must at least equal the number of problems to solve. Signs of a looser fiscal policy, continued deregulation and liberalization, and steady monetary growth pointed to a more promising situation in 1987, however.

In 1986 Tokyo as well as other capitals became increasingly aware of the depth and strength of economic links between nations, as independent national economic policies grew less and less effective at solving domestic and international economic problems. The need to coordinate and cooperate was vividly brought home by the wild gyrations of the yen-dollar exchange rate. Adjusting to the new economic realities and the challenges they represent will be a difficult process for all governments.

For further information, contact Jon Choy.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

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REPORT

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IN THIS ISSUE:

Inflation Fears Rise in Japan 1

Fiscal Restraints Loosening 3

New Era In Japanese Politics 4

Senate Continues Work On Trade Bill 5

Weinberger Visits Japan 7

Tokyo Vows Tighter Control
On Strategic Exports 8

Notes: Competition For KDD;
Import Price Survey 9

Inflation Fears Rise In Japan

Japanese monetary policy during the past 18 months has focused on expanding domestic demand and slowing the appreciation of the yen. In line with this emphasis, the Bank of Japan cut interest rates to record low levels and allowed more rapid growth of the money supply. Now that many economists believe the economy has bottomed out and the exchange rate has been stabilized (at least temporarily), attention is shifting to the effect of monetary policy on prices. The central bank is concerned that the speculative transactions that have boosted the cost of land in urban areas and raised the prices of stocks will rekindle inflation.

Japan's consumer price index in FY 1986 (April 1, 1986-March 31, 1987) was unchanged, the first year since fiscal 1958 that it failed to increase. The appreciation of the yen and the drop in oil prices helped reduce electric and water utility charges by 7.7 percent, transportation and communication services by 1.5 percent and food prices by 0.8 percent. The stability of prices enabled consumer spending to rise 3 percent in real terms in FY 1986 despite modest wage gains and a worsening employment situation.

Bank of Japan officials, though, believe that wholesale prices, which fell 10 percent in FY 1986, are about to reverse course. One reason is an expected increase in the price of imports resulting from the recent drop in the yen, which closed at Y149.25 on July 6, its lowest rate in over three months. Bank of Japan governor Satoshi Sumita, though, welcomed the dollar's recovery, which he attributed to increased Japanese investment in U.S. securities since March. Ministry of Finance officials believe that net purchases of foreign bonds hit a record high of about $14 billion in June. Japan's May current account surplus, which declined from the year-earlier level for the first time since August 1984, was another reason for the dollar's increased strength relative to the yen.

Higher wholesale prices will in turn raise consumer prices, which already show signs of increasing. The Management and Coordination Agency reported that the cost of living in Tokyo, a bellweather of national inflation trends, rose 0.7 percent in June over a year ago, the third consecutive monthly increase. With pay raises averaging only 3.5 percent this year, it would not take much of a rise in inflation to put a significant dent in workers' real income gains -- a major factor determining consumer spending. Given the probable decline in export volume, steady growth in consumer spending is necessary to achieve the government's 3.5 percent real growth outlook.

Japan's Money Supply

(average outstanding in trillions of yen)

		M2 + CDs	Percentage Change From Year Earlier	Official Discount Rate*
1980		Y197.9	9.2%	7.25%
1981		215.5	8.9	5.5
1982		235.3	9.2	5.5
1983		252.6	7.4	5.0
1984		272.4	7.8	5.0
1985		295.2	8.4	5.0
1986		320.7	8.7	3.0
1987	January	337.4	8.6	3.0
	February	336.0	8.8	2.5
	March	343.7	9.0	2.5
	April	345.5	9.8	2.5
	May**	347.2	10.2	2.5

*End of period
**Preliminary

Source: Bank of Japan

Fears that the booming prices of stocks and real estate will lead to inflation have led the Bank of Japan to ask commercial banks to restrict lending for speculative purchases. The 13 major banks have agreed to limit loans in the July-September period to 5.9 percent above the same quarter a year ago, compared to a 32.9 percent rise in the April-June quarter. Mr. Sumita, though, said he plans to continue the easy monetary policy that resulted in a 10.2 percent rise in the money supply in May, the first double-digit increase since 1982 (see Table). The acceleration of money supply growth, he said, is a natural result of the reduction in the official discount rate from 5 percent at the end of 1985 to a record low of 2.5 percent.

Many economists and government officials, however, believe that there will be no resurgence of inflation in the near future. The Organization for Economic Cooperation and Development, for example, sees consumer prices unchanged in 1987 followed by a 1.75 percent increase in 1988. Many analysts point to the unemployment rate, which rose to a record 3.2 percent in May, as a more serious problem at present.

Randall S. Jones

Fiscal Restraints Loosening

An increasing number of signs point to a turnaround in Tokyo's fiscal policy, at least for the medium-term. After years of spending reductions and high taxes, the Ministry of Finance appears to have lifted its target for FY 1988 spending. A more immediate concern, however, is how to utilize record FY 1986 revenues -- an increase in FY 1987 tax cuts seems most likely.

A subcommittee of the Special Advisory Council on the Enforcement of Administrative Reform, an important advisory committee to the prime minister, has reportedly recommended major increases in public works outlays by lifting the cap on government fixed investment. The panel argued that "fiscal stimulative measures are important as an initial explosive for expanding domestic demand and the construction of social infrastructure" -- and defusing foreign criticism of Japan's large trade surpluses, the subcommittee hopes. Despite all this, the group reiterated the need to balance the budget, but delayed the timetable by saying it should be achieved "as soon as possible" rather than by the current FY 1990 deadline. The report suggested that expenditures for welfare, education, local government subsidies, and energy and agricultural price supports be gradually reduced. As for taxes, it hinted that "an appropriate balance among income, asset and consumption taxes" needs to be struck -- an indirect argument for more of the latter. The full council will discuss the recommendations July 13 before submitting them to the prime minister toward the end of the month.

The Ministry of Finance seems to have already taken the hint by spreading the word that the "minus ceiling" policy will not be in effect for the FY 1988 budget cycle just beginning. Each year since 1983 MOF has urged every government agency to cut current expenditures by 10 percent and investment outlays by 5 percent. Officials appear to have relented on the latter, although the guideline for current spending is still in effect. In addition MOF is considering setting a separate target of Y1.3 trillion ($9.3 billion at Y140= $1.00) for public works spending to keep outlays at or above FY 1987 levels.

Proceeds from the sale of another block of the government's holdings of Nippon Telegraph and Telephone Corp. stock will finance the bulk of the spending.

The Finance Ministry was happily surprised by a record revenue surplus of Y1.8 trillion ($12.9 billion) in fiscal 1986. Revenues rose an unexpected 9.6 percent above FY 1985's Y41.9 trillion ($299.3 billion), yielding a bonus of Y2.4 trillion ($17.1 billion) over predicted receipts. MOF traced the surge to the increased interest income of corporations, which produced an extra Y1,359 billion ($9.7 billion) in corporate taxes; skyrocketing land prices, which boosted real estate, inheritance and income taxes (Y284.9 billion or $2 billion); and booming financial markets, which generated increased securities taxes (Y385.4 billion or $2.8 billion). MOF has allocated Y403 billion ($2.9 billion) to help pay for the fiscal 1987 supplemental budget, while the remaining amount will be transferred to next year's budget. The supplemental budget infusion will allow the government to increase income tax reductions from Y1 trillion to around Y1.4 trillion, a move that should give the economy an immediate shot in the arm. The windfall immediately generated opposition party calls for even greater cuts, but MOF clearly intends to use the money to redeem some of the national debt.

The motives for MOF's abrupt change of heart are complex. As the economy slowed over the past 18 months, Finance officials staunchly retained their tight-fisted spending policy, although they were under pressure to play a more aggressive role. Rising foreign criticism of Japan's increasingly large trade surpluses may also have been a factor, although this too might be a secondary consideration in MOF's eyes. Probably the unexpected revenues were the key that unlocked the spending floodgates. The sale of NTT stock has already yielded approximately Y2.4 trillion ($17.1 billion) and will easily bring in similar amounts over the next several years. Combined with the revenue windfall, Finance has a considerable source of income that does not add to the national debt -- hence its stimulative stance. Concern over the deficit is still strong within MOF, but it is likely to remain submerged for the near term.

Jon Choy

New Era In Japanese Politics

On July 4 a new era dawned in Japan as Noboru Takeshita formally set up his personal faction, drawing from the support of 113 members of the 141-member faction of Kakuei Tanaka. The remaining 28 members affiliated with Susumu Nikaido or declared as independents. Mr. Takeshita has now taken the last step toward his goal to win election as Liberal Democratic Party president and prime minister of Japan next October.

The emergence of the new Takeshita faction marks the end of the long reign of Mr. Tanaka as the most powerful man on the political scene. Mr. Tanaka's influence had been waning since he suffered a serious stroke in February 1985, leaving the day-to-day affairs of the faction to his former confidante Mr. Nikaido. Although most observers agreed that Mr. Takeshita was the most popular figure in the group despite his relative youth, his challenge was to secure the support of the faction without alienating those who remained emotionally loyal to the former faction leader. Mr. Nikaido forced the issue in a sense by declaring his candidacy for the LDP presidency as the official representative of the faction. This forced Mr. Takeshita to defend his political territory by forming the new faction.

The size of his group leaves Mr. Takeshita in a superior position for the LDP presidential race, which officially has three candidates in the running at this point. Mr. Nikaido declared for the post May 14, while former Foreign Minister Shintaro Abe, now LDP executive council chairman, tossed his hat in the ring June 28. Finance Minister Kiichi Miyazawa is expected to enter the race as well. It is unlikely, however, that all four candidates will remain in the running. In order to qualify candidates must secure the endorsements of 50 LDP Diet members. Factional strength assures endorsements for Messrs. Takeshita, Abe and Miyazawa. In the case of Mr. Nikaido, the going will be a little tougher. Only 17 other members of the Tanaka faction sided with him in the leadership struggle; he must generate an additional 33 to be eligible to run.

Liberal Democratic Party Factions

Faction	Number of Members
Takeshita	113
Miyazawa	89
Abe	85
Nakasone	81
Komoto	32
Nikaido	18
Tanaka neutralists	10
Independents	17

Mr. Tanaka, once the most powerful figure in Japanese politics despite a 1983 bribery conviction in the Lockheed scandal, has seen his influence erode and his support shift to Mr. Takeshita. It is certainly not the end to his career he personally would have preferred. It is unlikely that Mr. Takeshita -- or anyone else -- will be able to match Mr. Tanaka's performance in the coming years in terms of sustained influence.

Yasuhiro Nakasone is now in a position where his influence vis-a-vis other factions is limited. His ability to affect the outcome of the LDP succession race would have been greater had the support for Mr. Takeshita been weaker. Instead, he is now one among many with the ability to secure certain political favors by virtue of his factional strength and position in the Japanese government. But he will not be able to act as the decisive vote in intra-party negotiations.

Michael W. Chinworth

Senate Continues Work On Trade Bill

Despite Senate Majority Leader Robert Byrd's (D, W.Va.) initial hope that action on the trade bill (S 1420) would be completed before the July 4

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REPORT

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U.S. IMPORTS FROM JAPAN: A REVIEW OF 1986 SALES

Summary

American manufacturers counting on the strong yen to help them regain part of the business they had lost to Japanese competitors during the 1983-85 expansion were thwarted more often than not last year by their trans-Pacific rivals. According to the textbooks, exporters should have tried to maintain profit margins by boosting the dollar prices of U.S.-bound shipments in line with the yen's 57.8 percent jump over the course of 1985 and 1986. That was the game plan in 1978. This time around, though, major suppliers opted for a different strategy: passing on only a fraction of the yen's higher value to protect their U.S. market share. Companies in a long list of industries could afford to absorb the bulk of the yen-dollar realignment in lower profit margins -- at least over the short run -- because they had not trimmed export prices when the dollar was climbing in the first half of the 1980s; they also found ways to reduce production costs. In addition, hedging in the forward exchange market protected big exporters from the near-term impact of the rising yen.

However small, the rise in Japanese prices meant another surge in the import numbers for Japan. But 1986's 19.1 percent jump in purchases to $81.9 billion reflected more than just the J-curve at work. The volume of Japanese-made imports also continued to expand even though the growth of inflation-adjusted domestic demand was paltry for the second straight year. Non-price competitive factors explained part of this seeming anomaly, but the main key was the response of American industry to higher prices on Japanese products. Instead of holding the line to improve their weak competitive position, U.S. manufacturers in a wide range of business lines raised their prices in an attempt to rebuild profit margins.

The 31.5 percent jump to $32.9 billion in purchases of automotive products from Japan was just the most graphic demonstration of the trade impact of these twin developments. They could also be seen in the capital goods numbers, which were up 17.7 percent to $25.3 billion, and in the 11 percent gain in consumer goods for a total of $15.5 billion. In fact, the only thing that kept the growth of the import tally close to 1985's 20.4 percent rate was a 1.2 percent dip to under $7 billion in arrivals of intermediate products.

Import Profiles

Automotive Products - Japan's automotive manufacturers and their American distributors had to take a quick refresher course last year on how to sell cars. No longer could dealers move the top-selling Japanese models off the lot almost as fast as they arrived and at prices above list the way they did during the 1983-85 period of pent-up U.S. demand and short Japanese supplies. Demand, while strong in 1986, was not as robust as it had been, in part because Americans had bought 30.6 million cars plus nearly 11.2 million light trucks over the previous three years; the slower pace of the economy and the staggering volume of consumer debt also took the edge off demand. At the same time, Detroit repeatedly demonstrated that it was prepared to go the expensive route of low-cost financing and rebates whenever sales of domestic makes dipped and inventories started to get out of line. Japanese car dealers also got their first taste of import competition in the U.S. market's low end with the arrival of Korea's Hyundai Motor Co. But what really worried Japanese car makers in 1986 was the impact of higher sticker prices on sales.

Japanese exporters had the luxury of taking a wait-and-see attitude on price increases when the yen began to appreciate in late February 1985 because the boom in American demand and the limits on U.S.-bound shipments added up to continued fat profit margins. With the start of the 1986 model year in September 1985, however, the industry began to play catch-up, hiking prices by a bigger-than-usual margin at the time they were introduced. More of the yen's rise was passed through in December, March and May/June 1986 as the Japanese currency went from mid-September's Y240=$1.00 level to Y170 or so in the spring. For the top Japanese nameplates -- Toyota, Nissan, Honda and Mazda -- Automotive News calculated that these increases averaged out to a $1,331 or 13.9 percent price hike for the 1986 selling season. And that was not the end of catch-up pricing: stickers were also upped at the beginning of the 1987 model year by anywhere from an average $372 (Honda) to $452 (Nissan).

While the five rounds of price hikes produced a politically damaging bulge in the import numbers as car purchases jumped 29.7 percent to $21.1 billion, at first glance there was little consumer resistance to the higher Japanese stickers. After all, sales of made-in-Japan cars expanded 7.4 percent in 1986 to a new record of 2,382,167 units and supplied 20.8 percent of the American market -- 0.7 point more than the year before. Retail deliveries of domestic makes, in contrast, barely exceeded 1985's figure with volume up just 0.1

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percent to 8,214,662 cars. That slim gain, moreover, was entirely the result of higher sales of cars assembled by Honda of America Manufacturing Inc., New United Motor Manufacturing Inc. (the Toyota Motor Corp.-General Motors Corp. joint venture) and Nissan Motor Manufacturing Corp. U.S.A., which jumped from 221,364 units in 1985 to 465,637 vehicles last year. And in a double blow for the U.S. Big Three, it took advanced car buying to limit the drop in their sales to 2.3 percent for a total of 7,602,261. Some sales were stolen from 1987's first half by Detroit's aggressive use of incentives; a yearend buying binge, triggered by the coming elimination of the sales tax deduction under tax reform, propped up the numbers as well.

A closer look at the sales statistics for Japanese manufacturers, however, revealed that they too were having problems. For openers, sales of Japanese nameplates were not as strong as the aggregate number suggested since nearly two-thirds of the extra imports retailed in 1986 had a General Motors or Chrysler Corp. badge. However, this was not the best evidence that the price hikes were causing marketing headaches because it was largely dictated by the government. Tokyo had earmarked the biggest part of the increase in the sedan and hatchback export ceiling for GM's and Chrysler's Japanese affiliates when the limit was raised in April 1985 from 1.85 million units to 2.3 million. It then opted to maintain existing company export allocations after rising protectionist pressures in the United States persuaded policymakers in early 1986 to keep the restraints in place for a sixth year.

But the modest sales increase posted by Japanese nameplates was not the only sign of pricing problems. For one thing, dealers generally sold a less profitable mix of models in 1986. With demand outstripping supply in the 1983-85 period, Japanese car makers had made the move into the midsize and luxury markets that are Detroit's mainstay. While not abandoning that strategy last year, most companies were forced to ship more cars at the lower end of their product line to the United States to keep sales on the upswing.

Then there were the inventory numbers. Skimpy stocks were a constant source of frustration for the U.S. marketing units of Japan's car makers during the 1983-85 boom, putting a lid on sales month after month. In 1985, for example, stocks never got higher than the year's opening total of a 26-day supply, itself less than one-third of what dealers said they needed to keep sales moving. That changed in 1986. Inventories zigzagged up to a 42-day supply on November 1 -- the highest figure in 46 months and a sure sign that sales were slowing since the import volume was only up 3.6 percent in 1986 to 2,618,709 cars. Toyota's and Honda's distribution networks could still sell all the cars they received from Japan, but Nissan, Mitsubishi and Isuzu dealers were clearly starting to have problems; so too were GM and Chrysler with their Japanese imports.

Perhaps the most telling sign that car buyers were balking at higher Japanese sticker prices was the spread of discounting in the last months of 1986. Auto industry analysts had been expecting this development since early in the 1986 model year, but import dealers were able to postpone the inevitable for almost 12 months thanks to Detroit's pricing decisions.

The U.S. Big Three had the chance to put real pressure on their Japanese competitors by holding the line on prices during the 1986 model year, but General Motors and Ford Motor Co. squandered this opportunity. The world's biggest motor vehicle company, Automotive News estimated, upped prices on 1986 models by an average of $950, which was just shy of the raises made by the leading Japanese importers. Pricing of 1987 domestic models at introduction reflected the same strategy of keeping profit margins fat even at the expense of sales, with GM's average $368 increase matching almost dollar for dollar the boosts for Toyota, Nissan and Honda, and Ford's $295 markup coming close. These hikes, plus smaller ones by Chrysler, allowed the Big Three to earn $7.6 billion in 1986 despite their costly incentive programs. But in the process of chalking up the third-highest profits on record, Detroit helped the competition market more cars and make extra money on those sales.

While Detroit's pricing policies averted a bruising fight for car sales, domestic industry executives harbored no illusions about the willingness of Japanese motor vehicle makers to flex their considerable marketing muscle to protect their U.S. sales position. That is what they have had to do in the hot but fiercely competitive American compact truck market.

Sales of downsized pickup trucks, vans and sports/utility vehicles increased five times between 1981 and 1986, with last year's 14.3 percent gain lifting the total to 2,564,566 units. The growing number of new vehicle buyers unwilling or unable in 1986 to foot the $12,500 average bill for an American car or the equally high cost of a Japanese model was one reason small trucks set a fifth straight sales record last year. Unrestricted trade in trucks (except for passenger vans) also helped to expand the market. But Detroit deserved a big part of the credit because of its smart product development in the early and mid-1980s. Having stood by in the late 1970s while Japanese makers carved out a U.S. market for small pickups, domestic manufacturers unveiled a versatile lineup of compact pickups, sports/utility vehicles and vans that triggered an expanding crossover of car buyers to trucks -- particularly for second or third family vehicles.

The U.S. industry's success in the small truck market kept Japanese producers on the defensive through the first half of the 1980s, but as suppliers demonstrated again in 1986, they were not prepared to give up more market share without a fight. Pricing of pickups remained aggressive despite four rounds of hikes on 1986 models and higher 1987 model prices since importers generally raised truck prices by smaller margins than car prices. For example, stickers on price-leader models, which had been maintained at $5,999 for four years, were raised to either $6,299 (Isuzu and Mitsubishi) or $6,599 (Mazda, Nissan and Toyota). At the same time, Japanese marketers continued to make liberal use of incentives, whether cash to dealers or cut-rate financing and rebates to buyers, to improve pickup sales -- something they resisted doing on cars last year. Truck makers also made changes in their products to meet a wider variety of passenger, cargo and performance requirements and backed these features as well as their competitive pricing moves with heavy advertising.

These expensive marketing strategies continued to pay dividends in terms of volume, with 1986 sales of Japanese compact truck nameplates up 15.9 percent to 937,031 units (including roughly 100,000 pickups assembled by Nissan in

Tennessee). But for all the marketing attention pickups received last year, much of this gain ironically came from small sports/utility vehicles -- the Isuzu Trooper II, Mitsubishi Montero, Nissan Pathfinder, Toyota 4Runner and particularly the Suzuki Samurai, which was a runaway success in its first full year on the American market. In the process, though, light truck imports from Japan ballooned 41 percent to $4.8 billion on a 21.4 percent shipment increase to 975,613 units.

Higher sales protected Japan's share of the U.S. market from further erosion in 1986 but that was about all. Led by another big increase in mini vans, sales of American compact makes expanded 13.4 percent to 1,627,535 vehicles and captured 63.5 percent of the market -- just 0.5 point less than in 1985. Even in the downsized pickup truck market Japanese competitors could do no more than hold their own since sales of domestic nameplates were up 8.9 percent to 635,850 units.

Higher truck sales, while bolstering Detroit's 1986 profit picture, did little to help hard-pressed American makers of original equipment parts. For them the bottom line is North American production of cars and trucks by U.S.-headquartered automotive manufacturers. By that measure last year was a near bust. Output totaled 12.4 million vehicles, 0.6 million units short of the 1985 tally and well below what producers still regard as the benchmark -- 1978's all-time-high production run of 14.6 million units.

Detroit's reduced parts requirements were just the most visible problem for OE manufacturers. The Big Three's slow but steady switch to outside vendors also proved to be a double-edged sword. Last year independents provided perhaps 30 percent of GM's parts, approximately half of Ford's and an estimated two-thirds of Chrysler's, but among the expanded ranks of outside suppliers were more foreign companies. Producers in low-wage countries continued to have an edge in the thousands of labor-intensive parts that go into cars and trucks. Moreover, the weaker dollar did little to stem the inflow of powertrain products and other major mechanical components from firms in Japan and Europe, mainly because many of those parts were covered by multi-year contracts signed before the dollar dropped.

Increased Big Three sourcing of production parts from Japan, pegged at $1 billion in 1986, was one reason imports of motor vehicle parts and accessories jumped again, this time by 36.9 percent to $6.1 billion. But domestic manufacturers have long pointed to the huge volume of replacement parts stamped Made in Japan as a bigger cause of both the U.S. industry's precarious position and the skyrocketing import number, and 1986 market developments did nothing to change that ranking.

American suppliers are on solid ground in linking the growth of imports primarily to replacement parts because the approximately 19.2 million Japanese vehicles sold in this country since the start of the 1980s have created a constantly expanding parts aftermarket. Their claim that Japanese-made replacement parts are a major cause of the industry's problems is largely off-base, however. After all, domestic manufacturers still control most sales of replacement parts for North American-built cars and trucks -- sales that make up roughly 85 percent of the U.S. aftermarket. They also are the main suppliers of replacement parts for Japanese vehicles distributed through automotive repair shops, mass merchandisers and other nondealer channels. Where American producers do have some cause for complaint is the trouble they have had breaking the near stranglehold of Japanese suppliers on the parts operations of Japanese car and truck dealers. While the dealer network handles well under 50 percent of the service and repair parts for Japanese vehicles, this is the primary U.S. distribution channel for mechanical components and other high value-added products.

On top of the import pull of the expanding aftermarket for Japanese vehicles, the domestic assembly operations of Japanese automotive manufacturers are increasingly pushing up the parts statistics. In 1986 Honda of America, Nissan Motor Manufacturing and NUMMI turned out a total of 627,276 vehicles; the year before the number was 361,190 and in 1984 it was only 239,108. With all three companies sourcing their engines, transmissions and differentials or transaxles as well as other key production components from Japan, the growth of U.S. production is starting to translate into substantial import gains. But this is not the end of the ripple effect, as American parts suppliers are quick to point out in complaining about the limited amount of business they have so far won from the three Japanese producers. Their plants plus the four facilities other Japanese vehicle makers had under construction or on the drawing boards at the end of 1986 had prompted an influx of Japanese parts suppliers to the United States that depend on subassemblies brought in from Japan to operate their American factories.

Capital Goods - On paper the combination of the strong yen and the modest rise in U.S. equipment spending should have reined in the growth of capital goods imports for the second year -- even allowing for some price hikes due to the yen's appreciation. But just the opposite happened, in part because purchases of Japanese-made computers, peripherals and parts, which had marked time in 1985, shot up 45.4 percent to $4.7 billion.

Industry analysts were at a loss to explain the magnitude of the import jump, either overall or in particular product lines. Purchases of personal computers, for example, expanded by one-third to just under $0.6 billion on a shipment gain of twice that size despite the fact that the once high-flying U.S. personal computer market experienced its second year of single-digit growth. The success of Japanese makers in portable PCs generated some of this increase, but sales, while hot, were too limited in number to account for more than just a fraction of PC imports.

Conventional wisdom offered another possibility. Now that the IBM PC has become a commodity product, so this thinking goes, Japan's computer industry has finally been able to capitalize on its prowess in high-volume production and its commanding international lead in semiconductor memories and peripherals for small systems and make deep inroads in the American IBM-compatible market. The reality was otherwise, though. Despite a generally new lineup of products and a big marketing push in 1986, Japanese manufacturers remained bit players in a market still dominated by International Business Machines Corp. and a host of American rivals.

The jump of roughly one-half to $2 billion-plus in arrivals of Japanese-made peripherals was less puzzling. For one thing, the U.S. market for printers, disk drives and terminals expanded at a faster rate in both 1985 and last year than the overall computer business, with the market's low end -- the stronghold of Japanese suppliers -- performing even better. Still, it was difficult to reconcile the size of the import jump with two partially related developments in Japan's peripherals industry in 1986 -- its loss of competitiveness in commodity products to other Asian countries in the wake of the yen's appreciation and another round of often deep price-cutting due to excess capacity.

The bottom line, however, was that Japanese manufacturers gained share in most segments of the U.S. peripherals market last year, generally at the expense of domestic competitors rather than foreign rivals. In printers -- where imports totaled $1.3 billion, including 3.4 million dot-matrix printers valued at $0.8 billion -- Japanese vendors strengthened their already dominant position in units for use with personal computers and workstations. Similarly, Japanese makers of Winchester disk drives tightened their control of the big market for low-capacity 5.25-inch hard drives, although American companies did keep them at bay in the high-capacity end. The story was much the same in floppy disk drives, with Japanese producers extending their lead in both the huge market for 5.25-inch units and the smaller one for microfloppies. In fact, the only peripherals business area where the Japanese competition came up short in 1986 was terminals and monitors.

Another flip-flop in semicondcutor imports also helped to boost the capital goods number by a higher-than-expected margin. This reversal, which converted 1985's drop of one-third into a gain of 5.8 percent to $1.3 billion, had perhaps as much to do with government actions as changing market conditions. Chip orders recovered from the anemic levels of 1985, with U.S. market bookings staying above billings through the year, in part because computer makers had worked off their excess inventories. But demand was still limited by the scaled-back performance of the computer industry and the modest growth posted by U.S. manufacturers of industrial and consumer electronics products, telecommunications equipment, transportation equipment and military hardware.

Yet even with an enormous glut of capacity overhanging the world semiconductor market, prices of commodity memory products -- 64K and 256K DRAMs (dynamic random access memories) and EPROMs (erasable programmable read-only memories) -- rallied last year. The first signs of a truce in the trans-Pacific price war that had sent quotes into a tailspin in 1985 came late that year when Japanese makers announced a round of price increases that they linked to the yen's appreciation. DRAM and EPROM prices went up again in the spring of 1986 after the Commerce Department preliminarily ruled that Japanese suppliers were dumping these products in the U.S. market. The much-publicized mid-year settlement of these trade cases produced another series of hikes, insuring that the growth in shipments from Japan would be magnified in the import statistics.

Price increases were also the name of the game in machine tools, with leading Japanese manufacturers marking up U.S. list prices by as much as 30 percent to cover part of the yen's appreciation. But these hikes, which lifted imports by a similar margin to $1.3 billion, did not translate into extra business for the beleaguered U.S. machine tool industry. Builders continued to be hamstrung by the same problem they had in 1985: the wait-and-see investment attitude prevalent in most domestic durable goods industries. Bookings showed some signs of life in 1986's first half because of strong aerospace demand and goods orders from automotive manufacturers and their suppliers, but demand weakened after mid-year, producing a big drop in industry orders for the second straight year. And that was not the end of the bad news for American producers since it took another large reduction in the backlog of unfilled orders just to keep 1986 shipments at the year-earlier level.

Ironically, business was better for Japanese companies in 1986 than for domestic builders -- although probably not as robust as the 5.1 point gain to 26.7 percent in Japan's share of U.S. apparent consumption might suggest. For one thing, American capital goods makers in the market for small and medium-sized numerically controlled lathes and machining centers had little choice but to buy Japanese equipment since U.S. machine tool manufacturers have conceded commodity markets like these to the competition. Moreover, despite higher list prices, Japanese marketers apparently continued to price their products aggressively to prevent a repeat of the huge inventory buildup that occurred here in the early 1980s.

Consumer Goods - Deciding how to handle the yen's appreciation was a tough decision for all exporters, but Japan's consumer electronics makers had a harder job than most. With Korean, Taiwanese and Hong Kong suppliers already controlling low-end audio and video sales in this country, Japanese manufacturers ran the risk of helping the competition make deeper inroads in the fiercely competitive U.S. market if they raised export prices. At the same time, though, the thin profit margins generated by most consumer electronics products gave producers less room to absorb the rise in the yen's value. And to complicate matters more, U.S. sales of consumer electronics equipment seemed to be losing steam -- particularly video cassette recorders, the premier growth product of the 1980s.

In the end Japan's big consumer electronics manufacturers temporized, raising prices by 15 percent or so while expanding production in their plants both here and in Asia and concentrating more on high-end products. This stratgy allowed most companies to maintain market share close to 1985 levels -- although not necessarily with products made in Japan. But profits took the expected beating and then some, mainly because of a softening VCR market.

Although market analysts predicted another round of VCR price-cutting in 1986 because of high post-Christmas inventories and signs that the days of go-go sales growth were over, Japanese manufacturers ignored the warnings. VCR shipments continued to pour into the United States last year, going up by 1.1 million units to 16.9 million worth $4.3 billion, and the predicted happened. Prices dropped by another $50 to $100 at retail as inventories swelled to 50 percent above the optimal level by the fall. The lower tags did generate extra volume, perhaps 10 percent more than in 1985, but profits, already squeezed, came under additional pressure.

Intermediate Goods - Japan's steel mills were also in a bind but of a different kind. Under a five-year agreement negotiated in March 1985 but retroactive to October 1, 1984, the industry's U.S.-bound shipments of carbon products are limited to 5.8 percent of apparent American consumption. For 1986 that worked out to be a low ceiling. Reduced output in the domestic automotive industry -- steel's single-largest customer -- put a damper on demand, as did declining production of industrial and agricultural machinery and rail transportation equipment. Lower energy prices also curtailed business from the oil and gas sector. To make matters worse, the important construction and container markets were flat. That left electrical equipment and appliances as the only sources of increased steel demand.

The soft U.S. steel market, however, represented only part of the Japanese industry's export problem. Because mills had exceeded their quota in the first 15 months of the restraint program, last year's initial ceiling was trimmed by an extra 11.1 percent to 4.5 million tons to make up for the overshipments. The result was a disaster for struggling steel makers: shipments to their main export market, already down by one-tenth from 1984's total, dropped 26.2 percent to 4.4 million tons. In the process, Japan's share of the American steel business fell to only 4.9 percent -- the lowest level since 1973.

And that was not the end of the industry's troubles. With U.S. steel demand weakening for the third consecutive year, Japanese suppliers were hamstrung in their ability to pass on any of the yen's appreciation. Higher prices could cost them additional sales and that was a risk they were unwilling to take. As a result, steel imports contracted by the same margin as shipments -- 26.8 percent to $2.2 billion.

Import Prospects

After absorbing the bulk of the yen's steep appreciation in lower profit margins for two years to protect their U.S. market share, most Japanese exporters are no longer in a position to pursue this strategy. Even those that can are having second thoughts because of the growing number of American industries making noises about Japanese dumping. Higher export prices are therefore inevitable. But these hikes are unlikely to produce a bulge in the import numbers. With the U.S. economy still muddling along, shipments should decline by enough to keep 1987 purchases from Japan close to last year's figure.

For further information, contact Susan MacKnight.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

U.S. Imports from Japan by Commodity, 1985 and 1986

(in millions of dollars* and indicated quantity units)

Commodity	Quantity		Value		Percent Change	Japan's Share of U.S. Imports
	1985	1986	1985	1986	1985/86	1986
Total Imports			$68,782.9	$81,911.1	19.1%	22.1%
Automotive Products			24,980.0	32,849.1	31.5	41.8
Cars	2,527,467 no	2,618,709 no	16,231.3	21,060.1	29.7	46.5
Assembled Trucks	803,965 no	975,613 no	3,408.6	4,807.3	41.0	60.3
Truck and Truck Tractor Chassis	1,785 no	3,798 no	20.8	57.1	174.5	6.1
Truck Bodies (incl. cabs)	6,228 no	9,772 no	49.7	97.3	95.8	55.2
Truck Tractor Bodies	4,274 no	2,270 no	50.8	31.8	-37.4	73.0
Automotive Parts, Accessories and Engines			4,429.5	6,065.6	36.9	26.7
Body Stampings			155.5	197.9	27.3	58.7
Bumpers			40.9	53.8	31.5	18.8
Wheels			71.1	109.3	53.7	27.0
Radiators			23.3	33.2	42.5	22.4
Mufflers and Tailpipes			30.2	52.1	72.5	28.1
Brakes and Parts			66.8	92.6	38.6	13.0
Transmissions			252.2	513.1	103.4	33.5
Shock Absorbers			25.5	29.5	15.7	28.9
Engines and Parts			652.4	885.4	35.7	21.2
Engines	576,472 no	653,191 no	463.7	638.7	37.7	21.4
Parts			188.8	246.8	30.7	20.9
Starting and Ignition Equipment			165.9	243.4	46.7	42.3
Battery Charging Generators	1,098,976 no	1,071,208 no	23.0	29.5	28.3	37.6
Starting Motors	1,699,816 no	1,962,186 no	47.8	64.0	33.9	58.2
Spark Plugs	521,966,000 no	428,182,000 no	29.4	29.6	0.7	46.5
Ignition Wiring Sets			38.9	76.5	96.7	8.9
Pumps			54.9	78.7	43.4	29.4
Electric Lighting Equipment			53.1	67.3	26.7	29.3
Lead-Acid Batteries and Parts			29.6	34.1	15.2	31.4
Tires			467.2	475.6	1.8	29.0
Car Tires	8,027,564 no	8,496,980 no	207.7	243.0	17.0	26.7
Truck and Bus Tires	2,539,960 no	2,113,340 no	259.5	232.6	-10.4	31.9
Radios	779,976 no	628,143 no	42.1	38.7	-8.1	12.3
Toughened and Laminated Glass			22.7	31.7	39.6	12.0
Metal Hinges, Fittings and Mountings			34.8	49.8	43.1	17.7
Furniture			61.9	102.8	66.1	13.5
Snowmobiles	23,083 no	26,591 no	34.2	51.8	51.5	60.1
Golf Carts, Mopeds and Similar Vehicles	743,539 no	456,580 no	726.3	656.9	-9.6	93.9
Capital Goods			21,515.7	25,333.9	17.7	33.2
Nonelectric Machinery			14,448.9	17,230.9	19.3	36.7
Business Machines			6,274.1	7,901.9	25.9	47.6
Manual Office Typewriters	331,842 no	419,755 no	72.2	71.2	-1.4	54.2
Electric Office Typewriters	61,752 no	607,664 no	29.4	144.2	390.5	66.6
Calculators	20,431,856 no	16,154,418 no	278.3	197.9	-28.9	62.4
Cash Registers (excl. point-of-sale units)	431,156 no	424,766 no	108.3	100.4	-7.3	97.6
Office Copying Machines and Parts			966.5	1,283.3	32.8	90.8
Copying Machines	775,972 no	856,654 no	721.7	922.6	27.8	92.5
Parts			244.9	360.7	47.3	86.7

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Imports 1986
Microfilm and Microfiche Reader-Printer Combinations	121,704 no	102,838 no	$171.1	$129.5	-24.3%	65.1%
Data Processing Equipment and Parts			3,233.6	4,703.0	45.4	42.7
Data Processing Equipment			1,924.9	2,781.1	44.5	50.2
Parts			1,308.7	1,921.9	46.9	35.1
Telephone Answering Machines and Office Recording and Transcribing Machines (except battery-operated)			106.5	136.0	27.7	46.7
Machine Tools and Parts			975.8	1,272.8	30.4	47.5
Electric Discharge Machines	1,010 no	956 no	50.8	56.1	10.4	65.3
Numerically Controlled Lathes	3,765 no	3,888 no	220.3	228.0	3.5	77.4
Machining Centers	3,860 no	3,299 no	306.7	313.8	2.3	85.4
Milling Machines	483 no	280 no	46.6	24.3	-47.9	21.5
Punching and Shearing Machines	1,611 no	1,801 no	70.2	95.5	36.0	54.1
Parts			109.9	110.3	0.4	25.6
Casting Machines Used in Metallurgy and Parts			112.5	62.0	-44.9	54.2
Farm Tractors	72,264 no	69,266 no	280.5	314.0	11.9	44.5
Under 40 Horsepower	58,807 no	52,000 no	214.7	238.0	10.9	86.4
40-79 Horsepower	13,306 no	15,282 no	63.6	64.0	0.6	20.7
Tracklaying Tractors for Farm Use	666 no	1,971 no	19.5	63.0	223.1	55.9
Hydraulic Excavators and Other Excavating Machinery and Parts			508.1	504.4	-0.7	34.4
Backhoes, Shovels, Clamshells and Draglines	3,245 no	5,200 no	138.1	235.6	70.6	52.2
Parts			122.9	127.8	4.0	21.0
Front-End Loaders	4,742 no	5,682 no	208.1	192.0	-7.7	32.2
Forklifts and Other Self-Propelled Work Trucks and Parts	34,426 no	31,264 no	274.1	300.5	9.6	44.7
Conveyors, Jacks and Other Materials Handling Equipment and Parts			180.2	243.6	35.2	23.2
Conveyors (except belt type)			22.0	64.4	192.7	55.1
Hydraulic Jacks	624,224 no	374,473 no	41.1	31.0	-24.6	34.5
Parts			33.5	53.9	60.9	13.2
Textile Machinery and Parts			176.2	237.8	35.0	21.9
Commercial Sewing Machines	181,795 no	214,717 no	59.7	100.6	68.5	71.9
Weaving Machines and Parts			32.9	21.8	-33.7	10.1
Knitting Machines and Parts			27.1	42.2	55.7	24.5
Pulp and Paper Mill Machinery and Parts			22.2	52.5	136.5	11.0
Sawmill and Other Woodworking Machinery and Parts			19.5	34.8	78.5	12.0
Printing Equipment and Parts			181.3	256.8	41.6	28.2
Sheet-Fed Offset Printing Presses	420 no	461 no	73.9	105.0	42.1	31.9
Roll-Fed Offset Printing Presses	57 no	116 no	51.7	73.5	42.2	52.9
Food Processing Machinery and Parts			19.1	33.5	75.4	11.9
Machinery and Parts for Making Plastics and Rubber			105.1	161.5	53.7	28.1
Injection Molding Machinery	909 no	1,229 no	50.9	99.3	95.1	44.5
Molds for Plastics and Rubber			20.0	29.6	48.0	11.6
Machinery and Parts for Wrapping or Packaging Candy and Tobacco Products			26.4	46.9	77.7	10.9
Automatic Weighing Machinery			29.5	37.8	28.1	72.0
Industrial Equipment for Treating Materials by Temperature Change and Parts			57.3	50.7	-11.5	15.2
Airconditioning Machinery and Parts			168.9	214.7	27.1	62.7
Pumps (except for motor vehicles) and Parts			74.2	77.7	4.7	12.1
Compressors and Parts			344.9	392.8	13.9	53.1
Refrigeration and Airconditioning Compressors Under 1/4 Horsepower	1,329,633 no	1,546,371 no	52.1	63.5	21.9	48.4
Refrigeration and Airconditioning Compressors Between 1/4 and 1 Horsepower	1,214,069 no	990,309 no	54.4	44.8	-17.6	49.8

Commodity	Quantity		Value		Percent Change 1985/86	Japan's Share of U.S. Imports 1986
	1985	1986	1985	1986		
Refrigeration and Airconditioning Compressors Over 1 Horsepower	3,114,718 no	3,461,733 no	$153.7	$206.3	34.2%	88.5%
Fans and Blowers (except for motor vehicles) and Parts			64.7	77.8	20.2	13.0
Power Hand Tools			187.6	192.1	2.4	44.5
Electric Hand Tools			135.0	202.8	50.2	61.8
Electric Drills	1,233,251 no	1,323,407 no	40.5	56.0	38.3	64.7
Electric Saws	566,079 no	847,869 no	34.6	60.1	73.7	82.4
Tools for Hand or Machine Use			162.4	173.3	6.7	22.2
Bearings and Parts			299.4	290.3	-3.0	43.8
Radial Ball Bearings			119.7	104.9	-12.4	43.0
Tapered Roller Bearings and Parts			100.8	94.4	-6.3	73.2
Taps, Cocks, Valves and Similar Devices and Parts			186.9	235.4	25.9	22.4
Speed Changers and Other Transmission Equipment			55.7	58.6	5.2	15.6
Small Stationary Diesel Engines and Parts			110.7	135.3	22.2	26.3
Small Stationary Gas Engines and Parts			161.1	227.7	41.3	66.1
Steam Turbines and Parts			40.8	47.1	15.4	36.3
Electromedical Apparatus and Parts			151.9	206.3	35.8	30.1
X-Ray Apparatus and Parts			85.7	100.8	17.6	16.6
Medical, Dental and Veterinary Instruments and Parts			154.5	203.4	31.7	35.0
Optical Instruments (excl. electro-optical)			88.4	132.5	49.9	76.5
Telescopes and Binoculars	6,525,630 no	4,128,265 no	110.8	103.8	-6.3	2.5
Microscopes and Parts			64.4	78.8	22.4	48.6
Nonelectric Measuring, Checking, Analyzing and Controlling Instruments and Parts			163.5	154.3	-5.6	23.9
Drafting and Marking Out Devices			47.2	50.1	6.1	33.1
Electric Measuring, Checking, Analyzing and Controlling Instruments and Parts			403.4	485.9	20.5	26.6
Instruments for Measuring or Controlling Liquids and Gases			56.8	80.1	41.0	28.4
Instruments for Physical or Chemical Analysis			31.3	34.3	9.6	21.6
Instruments and Apparatus for Checking or Measuring Electrical Quantities			119.4	112.7	-5.6	43.4
Film Processing and Printing Equipment			106.4	160.1	50.5	65.5
Magnetic Media			761.6	863.0	13.3	62.6
Blank Audio Cassettes	70,235,346 no	67,536,899 no	80.7	71.1	-11.9	47.6
Blank Video Cassettes	123,539,802 no	142,968,638 no	397.5	461.4	16.1	63.9
Blank Audio Recording Media (excl. cassettes and cartridges)			34.5	60.6	75.7	57.3
Blank Video Recording Media (excl. cassettes and cartridges)			131.8	148.0	12.3	89.0
Blank Computer Tape			54.2	62.9	16.1	45.8
Buildings, Door Frames and Other Structures of Nonferrous Metals			48.4	129.4	167.4	44.1
Electric Machinery			6,542.6	7,532.5	15.1	34.9
Semiconductors			1,205.7	1,275.5	5.8	22.4
Discrete Devices			326.3	347.0	6.3	28.3
Transistor Parts			217.9	232.9	6.9	38.2
Integrated Circuits			879.4	928.5	5.6	20.8
Linear (Analog) Chips	48,289,949 no	54,844,925 no	45.3	47.9	5.7	8.0
Digital Bipolar Chips			93.2	126.1	35.3	11.7
Digital Metal Oxide on Silicon Chips	201,655,545 no	296,194,229 no	699.8	694.4	-0.8	28.8
Chips, Dice and Wafers			119.8	116.1	-3.1	43.1
Mounted Piezo Electrical Crystals	106,254,418 no	90,352,210 no	39.3	46.3	17.8	67.4
Printed Circuit Boards	9,359,894 no	12,287,199 no	81.0	131.2	62.0	33.7

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Imports 1986
Capacitors			$121.2	$137.4	13.4%	36.5%
Fixed Aluminum Electrolytic Capacitors	817,518,745 no	901,358,717 no	55.8	57.8	3.6	80.3
Fixed Ceramic Capacitors	1,426,328,366 no	1,583,820,790 no	36.7	45.4	23.7	29.6
Electronic Tubes and Parts (excl. television picture tubes)			61.9	69.1	11.6	31.1
Cathode Ray Tubes			30.2	32.9	8.9	68.2
Microphones, Loudspeakers and Amplifers and Parts			589.2	544.4	-7.6	56.9
Loudspeakers	45,921,410 no	40,127,085 no	256.9	245.4	-4.5	61.6
Audiofrequency Amplifiers	3,193,381 no	2,337,589 no	212.2	182.4	-14.0	66.8
Television Cameras and Parts	791,827 no	510,200 no	425.0	383.2	-10.0	94.1
Radio Transceivers (excl. citizens' band)	618,314 no	541,781 no	129.6	112.4	-13.3	42.1
Radio Antennas (excl. citizens' band)	1,993,424 no	3,195,677 no	20.1	32.5	61.7	49.9
Radar and Radio Navigational Aids and Parts			67.5	91.9	36.1	26.7
Radiotelephonic Apparatus and Parts			279.9	308.8	10.3	32.0
Telephone Apparatus and Parts			735.2	756.7	2.9	42.0
Telephone Switching Equipment and Parts			205.2	162.8	-20.7	40.4
Telephone Instruments and Parts			404.3	363.6	-10.1	38.6
Teleprinting and Teletypewriting Machines and Parts			52.5	14.9	-71.6	63.5
Telegraph Apparatus and Instruments and Parts			298.6	323.8	8.4	71.0
Electrical Transformers and Parts			25.5	33.3	30.6	10.7
Switchgear			468.5	538.1	14.9	25.9
Switches			202.1	210.9	4.4	24.5
Relays			83.0	74.4	-10.4	39.1
Connectors			37.7	48.1	27.6	16.5
Rectifiers and Rectifying Equipment			114.7	154.9	35.0	25.5
Resistors			82.9	83.7	1.0	25.4
Insulated Electrical Conductors With Fittings			61.2	73.1	19.4	16.2
Insulated Electrical Conductors Without Fittings			17.5	27.4	56.6	11.5
Electric Motors and Generators			179.6	228.0	26.9	25.6
Electric Motors Under 1/40 Horsepower	12,859,644 no	13,319,305 no	83.6	87.8	5.0	55.1
Generator Sets			52.2	79.7	52.7	41.0
Gasoline Engine Generators Not Over 5 Kilowatts	148,475 no	142,098 no	43.1	60.1	39.4	99.2
Welding Equipment and Parts			96.0	87.0	-9.4	39.6
Batteries and Parts (excl. lead-acid batteries)			130.0	210.4	61.8	57.8
Primary Cells and Primary Batteries and Parts			65.5	99.4	51.8	55.7
Nickel-Cadmium Storage Batteries	17,658,970 no	29,236,352 no	52.2	82.0	57.1	58.1
Permanent Magnets and Magnetic Workholders			79.3	93.4	17.8	48.3
Electric Signalling Apparatus and Parts			163.2	210.7	29.1	30.8
Indicator Panels and Parts			86.4	112.1	29.7	57.8
Transport Equipment			524.2	570.5	8.8	7.4
Civilian Aircraft Parts and Engines			375.7	473.5	26.0	9.6
Self-Propelled Rail Vehicles	94 no	1 no	49.5	0.4	-99.2	1.3
Parts for Rolling Stock			58.9	62.3	5.8	15.2
Consumer Goods			14,017.2	15,451.1	11.0	19.7
Color Video Cassette Recorders	15,754,990 no	16,888,994 no	4,084.8	4,307.3	5.4	96.2
Black-and-White Video Cassette Recorders	141,778 no	699,317 no	48.8	151.6	210.7	98.2
Video Tape Players	195,485 no	225,194 no	81.1	95.5	17.8	84.4
Assembled Color Television Receivers	1,808,721 no	1,530,546 no	477.9	502.1	5.1	34.6
Assembled Black-and-White Television Receivers	714,861 no	725,763 no	64.7	59.0	-8.8	21.8
Television Combinations			136.8	345.6	152.6	65.4
Unassembled Television Receivers and Incomplete Subassemblies			285.0	306.5	7.5	31.4
Television Picture Tubes and Parts			113.4	122.2	7.8	45.7

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Imports 1986
Parts for Television Receivers			$649.6	$676.7	4.2%	47.5%
Converters, Preamplifiers, Amplifiers and Couplings for Cable Television			307.8	313.4	1.8	57.7
AM and AM/FM Radio Receivers (except for motor vehicles)	5,502,110 no	4,455,365 no	264.8	234.2	-11.6	43.7
Radio Receivers (except entertainment broadcast band)			52.4	46.1	-12.0	56.1
Radio-Tape Recorder Combinations	5,731,264 no	2,596,305 no	278.8	135.3	-51.5	40.9
Radio-Tape Player Combinations	11,220,463 no	11,611,974 no	675.7	712.9	5.5	48.5
Radio-Phonograph-Tape Recorder Combinations	646,504 no	1,049,907 no	225.8	635.6	181.5	95.7
Radio-Phonograph-Tape Player Combinations	527,422 no	244,184 no	35.4	20.9	-41.0	27.7
Audio Tape Players	5,084,910 no	5,153,790 no	121.4	151.9	25.1	73.2
Audio Tape Recorders and Parts	4,530,232 no	3,592,487 no	525.3	555.6	5.8	62.2
Tape Recorder and Tape Player Combinations (not incorporating radio or television receiver)			142.7	210.2	47.3	43.6
Record Players, Phonographs, Record Changers and Turntables and Parts	4,624,959 no	5,575,509 no	373.8	533.2	42.6	89.9
Electric Appliances and Parts			808.5	763.3	-5.6	29.6
Refrigerators and Parts			70.7	73.6	4.1	21.1
Parts			42.3	44.9	6.1	45.0
Microwave Ovens	3,601,307 no	3,547,653 no	407.4	367.1	-9.9	49.9
Electric Stoves and Ranges and Parts			172.2	178.1	3.4	84.8
Window and Wall Airconditioners	116,194 no	95,985 no	26.5	27.1	2.3	31.6
Home Sewing Machines	228,556 no	133,472 no	31.5	28.3	-10.2	19.6
Kerosene Heaters	1,218,757 no	740,780 no	56.6	43.3	-23.5	43.9
Lawn Mowers and Parts			36.3	50.7	39.7	42.9
Portable Typewriters	1,421,237 no	922,741 no	120.6	88.5	-26.6	62.7
Typewriter and Similar Ribbons			9.4	35.5	277.7	66.1
Electric Filament Lamps (excl. sealed beams)			45.6	65.8	44.3	26.0
Mirror Glass			23.7	31.9	34.6	31.0
Earthen and China Tableware and Household Articles			392.0	391.5	-0.1	35.5
Nonbone China Tableware	195,497,796 pc	150,243,924 pc	149.4	144.5	-3.3	37.6
Earthen Tableware	332,884,500 pc	304,721,580 pc	177.2	174.7	-1.4	53.7
Table Flatware and Kitchen Knives			106.6	93.1	-12.7	33.7
Metal Housewares			43.3	47.6	9.9	6.3
Pipe Wrenches and Spanners and Parts			25.3	27.1	7.1	22.4
Fixed Focus Still Cameras	388,156 no	934,661 no	12.4	36.4	193.5	31.1
Variable Focus Still Cameras	5,218,913 no	6,093,120 no	489.6	643.2	31.4	88.8
Still Camera Parts			27.4	34.0	24.1	42.6
Mounted Photographic Lenses	5,613,419 no	5,026,321 no	158.2	194.5	22.9	80.8
Flash Apparatus			48.6	54.5	12.1	66.0
Still Photographic Color Film (35 mm)	42,361,181 no	42,156,986 no	52.2	54.3	4.0	61.4
Optical Elements			107.0	129.8	21.3	37.9
Glasses and Frames			63.6	86.0	35.2	13.9
Frames	604,894 no	705,154 no	40.7	58.6	44.0	20.0
Clocks and Watches and Parts			476.2	472.9	-0.7	31.0
Solid State Electronic Watches	8,565,226 no	10,574,362 no	52.0	48.9	-6.0	29.8
Other Watches Without Balance Wheel and Hairspring	14,815,614 no	15,598,682 no	305.6	303.5	-0.7	40.3
Electric Clocks (incl. battery operated)	4,801,537 no	4,707,567 no	39.4	42.3	7.4	38.8
Toys and Sporting Goods			563.8	523.1	-7.2	11.8
Toys			257.1	134.8	-47.6	6.9
Rubber or Plastic Toys			126.2	81.6	-35.3	19.1
Models			30.6	44.5	45.4	22.4
Video Games and Parts			77.5	129.7	67.4	49.7
Firearms and Parts			45.4	54.0	18.9	25.0
Fishing Equipment			81.0	79.2	-2.2	35.3

Commodity	Quantity		Value		Percent Change	Japan's Share of U.S. Imports
	1985	1986	1985	1986	1985/86	1986
Musical Instruments and Parts			$293.7	$391.0	33.1%	59.0%
Pianos and Parts			57.3	67.2	17.3	48.4
Electronic Musical Instruments			175.7	245.1	39.5	89.2
Motorcycles and Parts (excl. engines)			883.8	853.3	-3.5	92.8
Motorcycles	710,674 no	534,742 no	693.7	691.6	-0.3	94.0
Motorcycles with Piston Displacement Between 190 cc and 290 cc	118,642 no	104,780 no	115.6	140.2	21.3	97.7
Motorcycles with Piston Displacement Over 290 cc	239,129 no	191,332 no	418.3	410.3	-1.9	92.8
Parts (excl. engines)			190.1	161.7	-14.9	87.9
Adult Bicycles and Parts			124.1	155.2	25.1	34.1
Bicycles	532,719 no	465,173 no	58.9	68.4	16.1	23.1
Parts			65.3	86.8	32.9	54.4
Outboard Motors and Parts	157,450 no	124,010 no	129.1	183.5	42.1	70.5
Parts for Pleasure Boats			19.0	36.6	92.6	29.5
Clothing and Accessories			487.3	464.0	-4.8	2.7
Women's Cotton Slacks	11,099,292 no	8,859,888 no	78.8	59.6	-24.4	9.6
Women's and Girls' Cotton and Manmade-Fiber Knit Shirts	7,794,456 no	7,450,320 no	23.0	25.9	12.6	3.4
Scarves, Shawls and Mufflers			27.2	42.9	57.7	27.0
Furniture			68.6	75.5	10.1	2.3
Pearls (not set or strung)			200.4	161.5	-19.4	83.2
Jewelry			67.2	74.4	10.7	3.0
Works of Art			40.0	45.4	13.5	4.5
Printed Material			153.1	197.0	28.7	14.3
Books			93.6	125.7	34.3	18.3
Pens and Pencils			109.4	129.3	18.2	57.5
Ballpoint Pens	186,712,492 no	223,740,442 no	38.9	50.5	29.8	61.3
Marking Pens			23.4	31.7	35.5	58.4
Cigarette Lighters and Parts			29.3	25.9	-11.6	27.7
Pharmaceuticals			165.5	261.0	57.7	11.9
Bulk Vitamins			42.2	50.9	20.6	32.0
Bulk Antibiotics			24.5	42.5	73.5	20.9
Benzenoid Drugs			75.8	131.7	73.7	13.6
Intermediate Goods			7,035.3	6,948.7	-1.2	6.8
Steel Mill Products	5,990,077 stn	4,422,244 stn	3,048.3	2,231.5	-26.8	27.3
Ingots, Blooms, Billets and Slabs (excl. alloyed)	2,244 stn	155,266 stn	0.7	27.2	3,785.7	7.3
Wire Rods and Bars	1,190,072 stn	841,812 stn	453.1	345.7	-23.7	21.6
Unalloyed Wire Rods	236,553 stn	216,685 stn	84.7	83.6	-1.3	22.7
Alloyed Wire Rods	57,890 stn	54,464 stn	39.8	41.1	3.3	42.0
Cold-Formed Unalloyed Bars	72,849 stn	34,791 stn	34.0	17.3	-49.1	22.5
Semifinished Angles, Shapes and Sections Over 3"	669,259 stn	408,494 stn	202.3	129.7	-35.9	24.3
Plates and Sheets	2,945,492 stn	2,535,358 stn	1,430.3	1,209.6	-15.4	31.5
Tin Plate and Tin-Coated Sheets	253,122 stn	202,906 stn	137.2	113.0	-17.6	54.8
Coated Plates and Sheets	1,492,082 stn	1,237,330 stn	748.0	628.5	-16.0	49.8
Unalloyed Non-Pickled Plates and Pickled Sheets	214,634 stn	211,684 stn	72.0	67.0	-6.9	10.5
Black Plate	141,149 stn	139,295 stn	59.8	56.9	-4.8	67.0
Unalloyed Hot-Rolled Sheets	130,642 stn	104,393 stn	43.1	31.5	-26.9	9.5
Unalloyed Cold-Rolled Sheets	624,185 stn	527,367 stn	257.7	208.4	-19.1	23.5
Plates, Sheets and Strip of Alloy Tool Steel	58,461 stn	79,203 stn	58.4	70.4	20.5	56.4
Strip	72,072 stn	50,981 stn	82.0	62.7	-23.5	30.1
Alloy Tool Steel Strip	31,581 stn	18,201 stn	48.5	30.8	-36.5	53.5
Rails	210,896 stn	88,661 stn	83.5	34.3	-58.9	43.1
Wire (excl. flat wire and insulated electric wire)	140,617 stn	107,502 stn	100.8	80.3	-20.3	21.0
Unalloyed and Uncoated Wire	94,322 stn	74,946 stn	54.5	47.6	-12.7	29.1

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Imports 1986
Tubes, Pipes and Fittings	1,425,788 stn	717,304 stn	$889.6	$464.4	-47.8%	29.2%
Cast Fittings, Forged Steel Flanges and Butt-Weld Fittings	40,414 stn	25,703 stn	67.0	51.8	-22.7	35.7
Unalloyed Welded or Seamless API Line Pipe	271,457 stn	178,563 stn	114.5	73.9	-35.5	27.3
Unalloyed Welded or Seamless Pipes and Tubes, Not Threaded	189,680 stn	61,526 stn	68.6	24.9	-63.7	20.4
Unalloyed Welded or Seamless Pipes and Tubes, Threaded	261,114 stn	83,430 stn	179.9	53.7	-70.2	65.3
Unalloyed Pipes and Tubes of Circular Cross Section	186,789 stn	102,700 stn	103.8	55.7	-46.7	42.7
Stainless and Alloy Tool Steel Pipes and Tubes	90,855 stn	46,948 stn	118.3	74.3	-37.2	38.6
Nonferrous Metals			535.0	504.6	-5.7	6.6
Copper and Copper Alloys			106.9	121.0	13.2	8.8
Pipes and Tubes			62.2	71.4	14.8	42.0
Aluminum and Aluminum Alloys			347.5	330.3	-4.9	12.0
Wrought Aluminum Sheets and Strip, Not Clad	152,993 stn	152,351 stn	313.8	294.1	-6.3	45.7
Titanium	3,476 stn	2,673 stn	28.5	21.3	-25.3	59.1
Steel Pillars, Girders and Similar Structural Units			30.0	27.8	-7.3	16.2
Metal Containers			141.0	14.0	-90.1	8.4
Wire Products (excl. insulated electric wire)			140.1	131.3	-6.3	24.9
Steel Wire Strand, Unfitted and Uncovered	48,610 stn	41,165 stn	47.4	46.3	-2.3	29.2
Brass-Plated Steel Rope and Cable, Unfitted and Uncovered	24,800 stn	21,190 stn	49.8	45.2	-9.2	39.6
Nails and Industrial Fasteners			419.4	384.4	-8.3	34.4
Steel Bolts and Bolts With Nuts	55,320 stn	48,092 stn	51.1	57.9	13.3	39.0
Steel Nuts	56,105 stn	45,757 stn	88.8	80.5	-9.3	46.7
Steel Screws	177,510 stn	136,363 stn	200.5	172.4	-14.0	52.6
Locks and Padlocks			18.3	30.2	65.0	14.9
Steel Chains			60.6	68.5	13.0	45.7
Industrial Chemicals (excl. fertilizers and pharmaceuticals)			1,098.1	1,359.7	23.8	18.9
Organic Chemicals Found Naturally in Coal Tar			69.9	54.0	-22.7	12.7
Benzene	26,770,814 gal	31,340,791 gal	34.6	26.4	-23.7	20.9
Toluene	24,603,243 gal	30,122,125 gal	29.7	21.8	-26.6	19.4
Other Cyclic Organic Chemical Products			123.1	139.0	12.9	16.2
Aromatic or Odoriferous Compounds (incl. flavors)			57.8	65.1	12.6	65.7
Organic Acids, Acid Anhydrides and Salts			42.9	127.3	196.7	38.6
Amino Acids and Other Nitrogenous Compounds			113.5	142.5	25.6	20.0
Synthetic Organic Dyestuffs			117.2	155.2	32.4	33.4
Plastic Materials and Resins			321.4	344.0	7.0	21.7
Flexible Film, Strips and Sheets of Plastic Materials			135.1	156.7	16.0	27.2
Synthetic Rubber			35.5	33.0	-7.0	11.2
Rubber or Plastic Hose, Pipe and Tubing			35.7	62.2	74.2	29.0
Rubber or Plastic Gaskets			34.1	49.9	46.3	23.3
Tires and Tubes (excl. car, truck and bus tires)			94.8	100.8	6.3	28.9
Plywood and Veneers	114,099 msf	117,208 msf	37.4	27.4	-26.7	3.3
Paper Products			106.4	137.3	29.0	2.3
Coated Paper and Paperboard			66.7	91.6	37.3	12.9
Yarns, Fabrics and Made-Up Textile Articles			715.2	855.4	19.6	14.8
Manmade-Fiber Yarn	9,630 stn	11,944 stn	42.5	61.5	44.7	13.6
Cotton Fabrics	111,755,237 syd	117,690,865 syd	142.6	163.5	14.7	16.3
Manmade-Fiber Fabrics	217,790,778 syd	304,217,489 syd	272.2	357.1	31.2	37.7
Fabrics 85 Percent or More By Weight Polyester	134,181,919 syd	186,794,941 syd	135.9	211.0	55.3	54.1
Silk Fabrics	4,906,444 syd	5,189,809 syd	21.6	27.4	26.9	13.8
Wool Fabrics	7,338,185 syd	5,156,937 syd	27.6	27.1	-1.8	20.1
Wadding, Batting and Nonwoven Fabrics	1,834 stn	1,594 stn	41.9	37.5	-10.5	44.0

Commodity	Quantity		Value		Percent Change	Japan's Share of U.S. Imports
	1985	1986	1985	1986	1985/86	1986
Ceramic Tile	80,536,221 sft	54,556,963 sft	$66.5	$59.9	-9.9%	18.9%
Electrodes for Electric Furnaces and Electrolytic Use	36,791 stn	30,224 stn	64.9	53.1	-18.2	49.7
Coke for Use as Fuel	464,265 stn	294,103 stn	36.0	23.0	-36.1	90.7
Photographic Film and Paper (excl. film packaged for retail sale)			345.7	358.3	3.6	43.1
Medical X-Ray Film	90,220,783 sft	76,429,306 sft	71.7	55.2	-23.0	45.1
Silver Halide Color Photographic Paper	686,697,071 sft	682,674,112 sft	133.9	131.0	-2.2	48.4
Food and Feed			500.3	503.9	0.7	2.1
Fish and Fish Products			278.1	260.1	-6.5	5.5
Fresh, Chilled or Frozen Tuna	26,618 stn	16,177 stn	42.7	22.9	-46.4	9.6
Scallops	5,441 stn	5,822 stn	43.7	50.4	15.3	26.2
Alcoholic Beverages			27.7	31.3	13.0	1.0
Miscellaneous Imports			734.4	824.4	12.3	7.8
U.S. Goods Returned			346.8	369.7	6.6	6.2
Estimated Shipments			315.3	389.2	23.4	19.1

Key to quantity abbreviations:
gal = gallons
msf = thousand square feet
no = number
pc = pieces
sft = square feet
stn = short tons
syd = square yards

*Imports are valued on a Customs value basis.

Source: U.S. Department of Commerce, U.S. General Imports: Schedule A Commodity by Country (FT 135), December 1985 and December 1986

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JEI

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IN THIS ISSUE:

Declining Manufacturing Employment In Japan 1

Supplementary Budget Faces Rough Seas 4

Nakasone's Task: Focus On Policies 5

Foreign Direct Investment In Japan Dips In FY 1986 6

Senate Nears Completion On Trade Bill 8

Notes: Dollar Rises To Y150 10

Declining Manufacturing Employment In Japan

One of the most remarkable features of Japan's economy in the postwar era has been its success in avoiding the unemployment problems that have plagued other countries. In 1986 unemployment was less than half the U.S. rate and one-fourth of Britain's (see Table 1). Although it is sometimes asserted that differences in measuring unemployment account for much of the disparity, careful analyses have shown that this is not the case. A calculation of Japan's unemployment rate using the U.S. definition only raises it by 0.2 percentage point at most, according to the Bank of Tokyo. This conclusion agrees with a 1984 study by the U.S. Department of Labor.

The impact of the strong yen on exports and corporate profits, though, has brought the unemployment rate up from 3 percent in April to a record 3.2 percent in May. In addition, the number of overtime hours worked in the manufacturing sector has fallen substantially below year-earlier levels. The worsening employment situation threatens to restrain workers' income gains -- a major factor in consumer spending. Given the probable decline in export volume, steady growth in consumer spending is necessary to achieve the government's 3.5 percent real growth outlook for FY 1987.

Table 1: International Comparison of Unemployment Rates

(percent of labor force, seasonally adjusted)

	1985	1986	January-March 1987
Japan	2.6%	2.8%	2.9%
United States*	7.1	6.9	6.6
West Germany	9.3	9.0	8.8
France	10.1	10.5	10.9
Britain	11.3	11.6	11.1

*Including armed forces.

Source: Tokyo Financial Review, June 1987.

Given Japanese manufacturers' continued emphasis on increasing overseas production, the service sector appears to be the key to providing jobs. Employment in the non-manufacturing sector did expand by 690,000 in 1986 in contrast to the loss of 90,000 jobs in the manufacturing sector and 140,000 in agriculture (see Table 2). But with the labor force growing by about 600,000 people annually, the growth in nonmanfacturing jobs will have to accelerate to provide work for both new workers and those who have lost jobs in other sectors.

The decline in manufacturing sector employment is expected to accelerate in coming years. In line with the lifetime employment system (which covers about 30 percent of Japanese workers), manufacturing firms in late 1986 had over 1 million redundant workers on the payroll, according to a recent Bank of Tokyo study. Faced with the continued competitive pressure posed by the high yen, these firms are likely to take more drastic measures to reduce labor costs. The Ministry of Labor recently predicted that 2.2 million jobs in the manufacturing sector will be lost during the next six years, partly as a result of increased production overseas. The report urged management to consult with labor before deciding to move abroad. A study by Sumitomo Bank estimated that manufacturing employment will decline by 1.35 million by 1990, boosting the unemployment rate to 5.6 percent.

While this adjustment will be painful for segments of Japan's economy, it is similar to trends in other advanced countries such as the United States. While manufacturing's share of U.S. gross national product has remained roughly

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Table 2: Changes in Japan's Labor Force

(thousands of workers; percentage change from year-earlier figure)

		Agriculture, Forestry & Fishing	Percent Change	Manu-facturing	Percent Change	Nonmanu-facturing*	Percent Change
1980		5,770	-5.9%	13,670	2.6%	35,920	1.6%
1981		5,570	-3.5	13,850	1.3	36,390	1.3
1982		5,480	-1.6	13,800	-0.4	37,100	2.0
1983		5,310	-3.1	14,060	1.9	37,950	2.3
1984		5,120	-3.6	14,380	2.3	38,170	0.6
1985		5,090	-0.6	14,530	1.0	38,540	0.7
1986		4,950	-2.8	14,440	-0.6	39,140	1.8
1987	January	3,920	0.2	14,300	-2.6	38,930	1.6
	February	3,870	0.8	14,220	-2.9	38,940	1.4
	March	4,250	-0.7	14,190	-1.9	39,540	2.0
	April	5,090	-3.6	14,070	-3.6	40,140	3.0

*Includes services, mining, construction, utilities, transportation, communications, wholesale and retail trade, finance, insurance, real estate and government workers.

Source: Management and Coordination Agency.

Table 3: Manufacturing Employment in Japan and the United States

(thousands of workers and share of labor force)

	Japan		United States	
	Manufacturing Employment	Share	Manufacturing Employment	Share
1955	7,570	18.0%	16,882	26.0%
1960	9,460	21.0	16,796	24.1
1965	11,500	24.0	18,062	24.3
1970	13,770	26.7	19,367	23.4
1975	13,460	25.3	18,323	19.5
1980	13,670	24.2	20,285	19.0
1981	13,850	24.3	20,170	18.6
1982	13,800	23.9	18,781	17.0
1983	14,060	23.9	18,434	16.5
1984	14,380	24.3	19,378	17.1
1985	14,530	24.4	19,314	16.7
1986	14,440	24.0	19,187	16.3

Source: U.S. Deparment of Labor and Japan, Management and Coordination Agency.

constant at about 20 percent, increased labor productivity has allowed its share of the labor force to drop from 26 percent in 1955 to 16.3 percent in 1986 (see Table 3). Although Japan experienced a similar shift beginning after the first oil shock, the trend was reversed in 1983 as a surge in exports resulted in an increase in both the absolute level and the share of the labor force employed in manufacturing. The expected decline in Japan's trade surplus in coming years should increase the share of the labor force employed in the service sector.

Randall S. Jones

Supplementary Budget Faces Rough Seas

Two components of the Y2.08 trillion ($14.9 billion at Y140=$1.00) supplementary budget occasioned tough exchanges between Prime Minister Yasuhiro Nakasone and opposition party members during the first stage of the Diet process: the government's plan to modify the maruyu tax-exempt savings system and overall fiscal policy. After the defeat of Mr. Nakasone's plan to impose a 5 percent value-added tax during the regular Diet session earlier this year, it is unclear if the supplementary budget will emerge from the special Diet session unscathed.

During June 8, the first day of preliminary questioning in the Diet, the prime minister ran into unexpectedly harsh criticism about his plan to abolish the maruyu system. Although resistance was expected, the opposition hinted that it may boycott the special session if changes are not made. Mr. Nakasone took a decidedly softer stance during the next day's questioning, claiming that he intends to modify, not abolish, the popular tax break and retain the tax-free feature for the poor, handicapped, senior citizens and widows, a group numbering up to 20 million. All others would face a flat tax on interest income. Opposition reaction to this proposal was negative, but less strident than before. Mr. Nakasone argued that while funds from sources other than taxes and bond issues will be available for the next few years (proceeds from the sale of government-held shares of Nippon Telegraph and Telephone Corp., for example), the government must establish new revenue sources to balance the budget over the long term.

Other aspects of the government's fiscal policy also came under fire from opposition leaders, despite a sputtering economy and intense international pressure for fiscal action. The opposition parties have traditionally sought to build voter support by pushing for tax cuts. The Y1 trillion personal income tax cut originally outlined in the supplementary budget has already been raised by the government to Y1.4 trillion in an effort to pre-empt this issue. Nevertheless, the opposition is demanding that an even greater amount be budgeted, pointing to FY 1986's windfall revenues from taxes and other sources (see JEI Report No. 25B, July 2, 1987).

Government plans to adjust food price supports and programs for small businesses also drew pointed questions. Mr. Nakasone was forced to promise that agricultural import controls and food price support programs would remain in place despite international pressures for their removal. How this squares with Japan's position on the new round of multilateral trade negotiations is party vice president Susumu Nikaido has declared his candidacy and has introduced a rough draft of his personal platform but is unlikely to pose a serious challenge. Political pundits suggest that Mr. Takeshita will be able to lock up the title by the end of the current Diet session, with support from the factions of Mr. Abe and Toshio Komoto. Mr. Nakasone's most difficult task during the coming weeks will be to persuade lawmakers to put passage of the government's programs ahead of factional interests.

Michael W. Chinworth

Foreign Direct Investment In Japan Dips In FY 1986

According to recently released Ministry of Finance figures, foreign direct investment in Japan declined slightly in fiscal 1986, probably due to the yen's appreciation. The United States remained the leading investor, accounting for 52 percent of the year's total value. Affiliates of foreign companies significantly raised their capital investments, perhaps indicating a shift toward their increased use of domestic funds. Investment in manufacturing facilities declined sharply in reaction to the recession induced by the high yen. On the other hand, the volume of funds pouring into the nonmanufacturing sector continued to increase.

In the year through March 1987, MOF was notified by foreign firms of 3,079 investments worth $940 million. After a very sharp upturn between FY 1981 and FY 1984 when the number of investments rose from 919 to 3,685, the trend has been declining -- down 9.9 percent in fiscal 1985 and 9.1 percent last year.

Despite a 6.9 percent drop in the number of investments, the United States actually increased its share of the total value of foreign direct investment in FY 1986 (see Table), thanks to a 18.2 percent jump in value. Switzerland, the number-two investor, recorded 1.8 percent fewer investments worth more money (up 3.5 percent). Affiliates of foreign firms ranked just behind the Swiss, accounting for 305 cases (up 54 percent) worth $85 million (up 73.5 percent). West Germany also showed sizable increases in volume (37.7 percent) as well as in value (88 percent). The United Kingdom, France and the Netherlands all registered sharp declines in value and sometimes volume.

In the competition to attract foreign investment, manufacturing retained its lead over nonmanufacturing, if only narrowly -- its edge shrinking to 57 cases and $52 million, compared with margins of 686 cases and $371 million the previous year. A foreign retreat from investments in the machinery industry is the primary reason for the decline in manufacturing, with the volume of investments off here by 35.2 percent and the value down 42.1 percent. In comparison overall investment in nonmanufacturing was up 62.5 percent in value and 13 percent in volume. There were huge leaps in the value of investments in communications (1,650 percent), construction (766.7 percent) and real estate (614.3 percent).

It is likely that nonmanufacturing will receive the majority of foreign investors' funds in the future for two reasons: deregulation of financial markets and other services is proceeding apace; and the center of economic activity is moving away from industry toward the service sector. Nevertheless, a

Foreign Direct Investment in Japan by Country, FY 1985-FY 1986

(in number of cases, millions of dollars and percent of total value)

	FY 1985			FY 1986			Total March 31, 1987		
	Cases	Value	Share	Cases	Value	Share	Cases	Value	Share
United States	525	$413	44.4%	489	$488	51.9%	5,574	$3,407	48.6%
Canada	71	13	1.4	88	2	0.3	373	126	1.8
United Kingdom	381	61	6.6	310	35	3.7	1,913	353	5.0
West Germany	130	25	2.7	179	47	5.0	1,186	297	4.2
France	244	22	2.4	173	17	1.8	1,199	152	2.2
Switzerland	224	86	9.2	220	89	9.5	1,248	447	6.4
Netherlands	189	108	11.6	179	19	2.0	763	182	2.6
Other Europe	200	32	3.4	170	28	3.0	1,205	206	2.9
Hong Kong	477	39	4.2	341	57	6.1	2,801	288	4.1
Japan*	198	49	5.3	305	85	9.0	2,276	1,121	16.0
Other	731	83	8.9	625	74	7.9	4,674	428	6.1
Total	3,370	930	100.0	3,079	940	100.0	23,212	7,007	100.0

*Investments by Japanese firms with significant foreign participation.

Foreign Direct Investment in Japan by Industry, FY 1985-FY 1986

	FY 1985			FY 1986			Total March 31, 1987		
	Cases	Value	Share	Cases	Value	Share	Cases	Value	Share
Manufacturing	2,028	$650	69.9%	1,563	$495	52.7%	11,420	$4,977	71.0%
Food	136	27	2.9	159	4	0.5	738	162	2.3
Textiles	0	0	0	31	19	2.5	139	50	0.7
Rubber and Leather	28	4	0.4	3	9	1.0	82	37	0.5
Chemicals	226	165	17.7	139	169	18.0	1,667	1,709	24.4
Petroleum	16	2	0.2	38	16	2.1	370	622	8.9
Nonmetallic Mineral Products	8	2	0.2	51	7	0.9	287	121	1.7
Metals	53	10	1.1	88	5	0.7	583	413	5.9
Machinery	1,288	404	43.4	834	232	24.7	6,367	1,626	23.2
Other	273	36	3.9	120	34	3.6	1,187	237	3.4
Nonmanufacturing	1,342	279	30.0	1,516	443	47.1	11,792	2,028	28.9
Construction	82	3	0.3	90	26	2.8	507	58	0.8
Real Estate	64	7	0.8	24	50	5.3			
Commerce	660	86	9.2	590	130	13.8	6,793	887	12.7
Services	284	42	4.5	467	47	5.0	2,917	312	4.5
Transportation	28	16	1.7	31	12	1.3	209	58	0.8
Communications	6	2	0.2	13	35	3.7			
Banking and Insurance	19	89	9.6	92	87	9.3	1,366	713	10.2
Other	199	34	3.7	209	56	6.0			
Total	3,370	930	100.0	3,079	940	100.0	23,212	7,007	100.0

Source: Ministry of Finance.

truly major shift will have to take place if the nonmanufacturing sector is to overcome the manufacturing sector's lead in terms of the cumulative value of investments.

Jon Choy

Senate Nears Completion On Trade Bill

The Senate narrowly missed the July 14 target that Majority Leader Robert Byrd (D, W.Va.) set for completing action on S 1420, the omnibus trade bill. Since this marks the second time that the chamber failed to meet a deadline -- the original target was July 4 -- it raises some question about the West Virginia senator's ability to lead effectively. Still, most of the work was finished by July 14, including nearly all of the controversial amendments. Some measures that qualify as "veto bait" were adopted, while moderate and hard-line senators struck compromises on others.

One of the most important concerns mandatory actions against countries that engage in a pattern of unfair trade practices. Few senators supported the House-passed Gephardt amendment, which requires reductions in the trade surpluses of countries that persist in their allegedly unfair trade practices. Rather, attention focused on a proposal by Donald Riegle (D, Mich.) and John Danforth (R, Mo.) -- two hard-liners in trade matters -- who hammered out an amendment designed to gain a consensus in the chamber. The amendment, which was sponsored by leaders on both sides of the aisle, sailed through the chamber by a vote of 87-7.

The compromise requires the U.S. Trade Representative to identify countries that consistently maintain trade barriers and record the dollar value of those barriers. The president is required to initiate what Sen. Byrd labeled a "super 301" case against the offending countries (under Section 301 of the 1974 Trade Act). If negotiations fail to eliminate the barriers or bring about an increase in U.S. exports equivalent to the value of the barriers, the White House would be required to retaliate unless (1) the General Agreement on Tariffs and Trade ruled against the United States; (2) an agreement was reached that was acceptable to the majority of the industry of the petitioner; (3) retaliation would cause serious harm to national security; or (4) as a last resort, the U.S. Trade Representative certified that it would be impossible for the country to eliminate the practice and it would provide full compensation. Moreover, the committees on Finance and Ways and Means would have the authority to identify "consistent pattern" countries.

The Danforth-Riegle compromise was considerably more moderate than many had expected. Previously, Sen. Riegle said he intended to introduce a variation of the Gephardt amendment. During the floor debate, however, leaders were adamant that the Senate proposal should not be identified with the provision in the House bill in any way. Sen. Byrd, for example, stressed that "to those who call this the son of Gephardt or just the Gephardt, they should not do that because they are misleading people if they do." He also asked that "everyone take a careful look at this amendment and not denominate it a protectionist amendment, not denominate it as an amendment by someone else in the House of Representatives." Still, observers continue to compare the Senate proposal

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THE JAPANESE DISTRIBUTION SYSTEM

Summary

The perception that the prices of imports in Japan have failed to fully reflect the sharp appreciation of the yen during the past two years has focused attention on the country's distribution system. Although a January 1987 government survey of 30 imported products did find significant cuts in the prices of 14 items and marginal declines in 15 others, import prices still seem unreasonably high and wholesalers are said to be enjoying windfall profits. Foreign businesses have complained that Japan's market opening efforts will be ineffectual if the sale of foreign goods is effectively limited by the distribution system.

Analysts have criticized Japan's distribution system as archaic and excessively cumbersome. It should be noted, though, that the system developed as a rational response to economic conditions in Japan and that it is in the midst of a vast restructuring, reflecting changing conditions. There are several policies that Tokyo could adopt to encourage these changes and promote imports, such as restricting anti-competitive practices and relaxing the restrictions on large retail stores, which sell a greater share of imports than small stores. Moreover, the government can encourage parallel imports, which are sold at prices significantly below foreign goods imported through regular channels.

The Ultimate Barrier to Imports?

Japan has made significant progress in reducing import barriers in response to foreign criticism of its trading system and large trade surpluses.

Eight market opening packages have been announced since December 1981 and there are now fewer overt trade restrictions on manufactured goods than in most other developed countries. The average tariff rate is among the lowest of advanced industrial countries at 2.6 percent, compared to 2.7 percent in the European Community and 3.6 percent in the United States. Japan imposes import quotas on only five mined and manufactured products, compared to six in the United States, eight in Italy and 46 in France.

Because of this, attention has shifted to less obvious barriers, such as regulatory restrictions, technical standards, cumbersome customs procedures and government procurement policies. In July 1985 the "Action Program For Improved Market Access" was initiated to respond to these complaints. A study prepared last year for the American Chamber of Commerce in Japan concluded that "While there is still room for further improvements in some areas, overall, the Japanese government is making an effort to remove obstacles and increase transparency." Several studies have concluded that the effect of Japan's tariff and nontariff barriers is surprisingly small. According to a 1984 report by the Institute for International Economics, the complete elimination of all import restrictions would have only increased U.S. exports to Japan by $5 billion to $8 billion in 1984, only a small fraction of the $36.8 billion trade imbalance that year. U.S. trade restrictions, it was noted, reduced Japanese imports to this country by a similar amount.

Increasingly, Japan's complex distribution system has been cited as the primary factor limiting imports. According to a 1982 report by the U.S. Trade Representative's Office, Japan's vast distribution network has "more wholesalers and retailers per capita than any other of the advanced industrial nations." The complexity of the system is a result of many layers of wholesalers selling largely to each other and innumerable, tiny retail outlets. Many foreign business executives complain that the system makes it difficult for their products to reach Japanese consumers at reasonable prices.

Development and Characteristics of Japan's Distribution System

Although it has only half the population of the United States, Japan had more wholesale establishments in 1982 (see Table 1) and just 10 percent fewer retail stores (see Table 2). Japanese retail establishments tend to be relatively small, averaging only half as many employees as in the United States. According to a 1984 report by the Economic Planning Agency, labor productivity in the wholesale and retail trade in Japan is 31 percent below the United States'. Japan's distribution system is seemingly out of step with the changes that have occurred elsewhere in the economy.

There are sound economic reasons, however, for most of these structural differences. One important feature has been the consumer's lack of mobility, encouraging purchases close to home. In 1960, for example, there was only one car for every 32 people. The increase in that ratio to one per 2.6 persons in 1985 has promoted the development of larger retail stores. In urban areas, though, inadequate parking and crowded roads still encourage shopping at small neighborhood shops. A second notable characteristic is the Japanese consumer's

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preference for fresh fish and vegetables, which leads to daily shopping trips to nearby stores. These factors have resulted in the development of a network of small retail stores to meet the needs of consumers and, in turn, several layers of wholesalers to supply the retailers.

Table 1: Comparison of the Wholesale Industry in Japan and the United States, 1982

	Japan	United States
Number of wholesale establishments (thousands)	429.0	416.0
Number of employees (thousands)	4,091.0	4,985.0
Number of employees per wholesaler	9.5	12.0
Population per employee in wholesale industry	29.0	46.5
Total annual sales (in billions of dollars*)	$1,600.0	$1,998.0
Annual sales per wholesaler (in millions of dollars*)	$3.7	$4.8
Annual sales per employee (in thousands of dollars*)	$391.1	$400.8
Ratio of wholesale sales to retail sales	4.2	1.9

*Converted to dollars at 1982's average exchange rate of Y249.08=$1.00.

Source: U.S. Department of Commerce, Statistical Abstract of the United States, 1986; Japan's Management and Coordination Agency, Japan Statistical Yearbook, 1986.

Table 2: Comparison of the Retail Industry in Japan and the United States, 1982

	Japan	United States
Number of retail establishments (thousands)	1,721.0	1,923.0
Number of employees (thousands)	6,369.0	14,468.0
Number of employees per retailer	3.7	7.5
Population per employee in retail industry	18.6	16.0
Total annual sales (in billions of dollars*)	$377.3	$1,065.9
Annual sales per retailers (in thousands of dollars*)	$219.2	$554.3
Annual sales per employee (in thousands of dollars*)	$59.2	73.7
Ratio of retailers to wholesalers	4.0	4.6

*Converted to dollars at 1982's average exchange rate of Y249.08=$1.00.

Source: U.S. Department of Commerce, Statistical Abstract of the United States, 1986; Japan's Management and Coordination Agency, Japan Statistical Yearbook, 1986.

Table 3: Size Structure of Wholesalers

Number of Employees	1964				1982				Percentage Point Change in Share, 1964-82	
	Establishments		Sales		Establishments		Sales			
	Number	Share	(Y billion)	Share	Number	Share	(Y billion)	Share	Number of Establishments	Sales
1- 2	56,739	24.8%	Y413	1.1%	100,000	23.3%	Y5,081	1.3%	-1.5	+0.2
3- 4	49,157	21.4	1,172	3.0	108,000	25.1	16,039	4.0	+3.7	+1.0
5- 9	62,427	27.2	3,504	9.0	120,000	27.9	42,487	10.7	+0.7	+1.7
10-19	35,836	15.6	5,115	13.2	61,000	14.2	51,297	12.9	-1.4	-0.3
20-29	10,823	4.7	3,136	8.1	18,000	4.2	32,244	8.1	-0.5	0.0
30-49	7,521	3.3	3,958	10.2	13,000	3.0	38,325	9.6	-0.3	-0.6
50-99	4,424	1.9	4,690	12.1	7,000	1.6	47,942	12.0	-0.3	-0.1
100+	2,321	1.0	16,843	43.4	2,800	0.7	165,121	41.4	-0.3	-2.0
Total	229,248	100.0	38,381	100.0	429,800	100.0	398,536	100.0	0.0	0.0

Source: Calculated from data in Japan Statistical Yearbook.

Japan's distribution system is characterized by long-term commitments intended to insure a secure and steady supply of goods from manufacturers to consumers. Geographic factors, including narrow streets and space constraints that limit inventories, force frequent, small-lot deliveries. In addition, there is considerable risk-sharing among the various players. Retailers, for example, generally have the right to return unsold goods.

Wholesalers, a category that includes the big trading companies such as Mitsubishi Corp. and Mitsui & Co., Ltd., have played a major role in Japan's economy. Most goods pass through more than one wholesaler on their way from the factory to the consumer. Wholesale sales were 4.2 times greater than retail sales in Japan in 1982, compared to 1.9 times in the United States. In many industries they have been a vital link between small manufacturers and retailers, providing financing, transport, storage and managerial and marketing skills. Many family-owned stores, lacking the resources to expand, have relied on their wholesalers to provide long-term financing. Given the lack of storage space in many retail establishments, wholesalers have also been required to provide frequent deliveries.

Large wholesalers continue to dominate the industry. Although only 2.3 percent of wholesale establishments had more than 50 employees in 1982, they accounted for over half of the sales in the industry (see Table 3). Small firms, though, still play a significant role. Firms with fewer than 10 employees, which nearly doubled in number between 1964 and 1982, increased their market share by almost 3 percentage points. And surprisingly, the trend is toward smaller firms; the average number of employees per wholesale establishment has fallen from its peak of 11.6 in 1972 to 9.7 in 1985 (see Table 4).

Table 4: Trends in the Japanese Wholesale Industry, 1954-85

Year	Total Number of Establishments (thousands)	Employees (thousands)	Employees per Establishment	Annual Sales (Y billion)	Sales per Employee (Y million)
1954	174	1,130	6.5	Y9,015	Y7.98
1956	180	1,294	7.2	11,840	9.15
1958	193	1,551	8.1	13,986	9.02
1960	226	1,928	8.5	18,468	9.58
1962	223	2,129	9.5	27,474	12.91
1964	229	2,524	11.0	38,830	15.39
1966	287	3,042	10.6	52,082	17.12
1968	240	2,697	11.3	62,817	23.29
1970	256	2,861	11.2	88,331	30.88
1972	259	3,008	11.6	106,780	35.50
1974	292	3,290	11.3	173,113	52.62
1976	340	3,513	10.3	222,315	63.28
1979	369	3,673	10.0	274,545	74.75
1982	429	4,091	9.5	398,536	97.42
1985	413	3,997	9.7	426,506	106.71

Source: Japan's Management and Coordination Agency, Japan Statistical Yearbook, 1986.

Table 5: Size Structure of Retailing

Number of Employees	1964				1982				Percentage Point Change in Share, 1964-82	
	Stores		Sales		Stores		Sales			
	Number	Share	(Y billion)	Share	Number	Share	(Y billion)	Share	Number of Stores	Sales
1- 2	916,835	70.3%	Y1,816	21.7%	1,036,000	60.2%	Y13,183	14.0%	-10.1	-7.7
3- 4	250,897	19.2	1,730	20.7	413,000	24.0	17,721	18.9	+4.8	-1.8
5- 9	98,240	7.5	1,699	20.3	188,000	10.9	20,627	22.0	+3.4	+1.7
10-19	26,318	2.0	960	11.5	54,000	3.1	11,791	12.5	+1.1	+1.0
20-29	6,221	0.5	372	4.5	15,000	0.9	5,739	6.1	+0.4	+1.6
30-49	3,730	0.3	350	4.2	9,500	0.6	6,059	6.4	+0.3	+2.2
50-99	1,609	0.1	311	3.7	4,500	0.3	5,393	5.7	+0.2	+2.0
100+	686	0.1	1,112	13.3	1,900	0.1	13,457	14.3	0.0	+1.0
Total	1,304,536	100.0	8,350	100.0	1,721,900	100.0	93,970	100.0	0.0	0.0

Source: Calculated from data in Japan Statistical Yearbook.

Unlike wholesaling, the retail industry is dominated by small establishments. Retail outlets with fewer than 10 employees accounted for 54.9 percent of sales in 1982 (see Table 5). Large stores, however, are much more efficient than small stores in Japan; although less than 1 percent of retail establishments had more than 30 employees in 1982, they accounted for about one-fourth of total retail sales in Japan. In contrast to the trend in wholesaling, large stores are gaining a greater share of the market and the average number of employees has increased significantly in the past 20 years (see Table 6). Many of the major retailers are supermarkets, which have increased market share at the expense of department stores (see Table 7). Still, only two of the top 20 retailers in Japan are large enough to be included in a list of the top 20 in the United States.

Table 6: Trends in the Japanese Retail Industry, 1954-85

Year	Total Number of Stores (thousands)	Employees (thousands)	Employees per store	Annual Sales (Y billion)	Sales per Employee (Y million)
1954	1,189	2,717	2.3	Y2,592	Y0.95
1956	1,201	3,005	2.5	2,999	1.00
1958	1,245	3,273	2.6	3,549	1.08
1960	1,288	3,489	2.7	4,315	1.24
1962	1,272	3,550	2.8	6,149	1.73
1964	1,305	3,811	2.9	8,350	2.45
1966	1,375	4,193	3.0	10,684	2.55
1968	1,432	4,646	3.2	16,507	3.55
1970	1,471	4,926	3.3	21,773	4.42
1972	1,496	5,141	3.4	28,293	5.50
1974	1,548	5,303	3.4	40,300	7.60
1976	1,614	5,580	3.5	56,029	10.04
1979	1,674	5,960	3.6	73,564	12.34
1982	1,721	6,369	3.7	93,971	14.75
1985	1,629	6,329	3.9	101,716	16.07

Source: Japan's Management and Coordination Agency, Japan Statistical Yearbook, 1986.

Small stores have been protected by the Large Retail Store Law, which requires cities and prefectures to take local interests into account when considering proposals to open large stores. The law, passed in 1974 and amended in 1979, restricts the opening of stores with a floor space exceeding 500 square meters (1,500 meters in the 11 largest cities). Applications to open stores of this size must be considered by prefectural governments and local city councils, which are often dominated by small retailers. While the council cannot ban a new store outright, it can make the application process excessively time-consuming and costly. In addition, it can impose conditions, such as limits on operating hours, that make the proposed store economically unattractive.

Table 7: Twenty Top Retailers in Japan, FY 1986

	Retailer	Sales (Y million)	Pretax Profits (Y million)	Number of Shops
1.	Daiei*	Y1,446,211	Y19,014	169
2.	Ito-Yokado*	987,804	52,074	127
3.	Seiyu*	823,512	9,458	172
4.	Jusco*	774,555	23,727	157
5.	Mitsukoshi	600,330	8,393	14
6.	Seibu	587,178	4,132	12
7.	Nichii*	560,370	18,154	158
8.	Takashimaya	525,020	13,358	6
9.	Daimaru	502,605	2,784	8
10.	Uny*	430,320	16,843	114
11.	Marui	400,727	35,300	34
12.	Matsuzakaya	372,896	8,575	9
13.	Kiosks	338,869	--	4,041
14.	Isetan	308,300	11,087	5
15.	Nagasakiya*	299,012	5,930	114
16.	Izumiya*	295,987	10,938	58
17.	Hankyu	285,893	6,403	8
18.	Tokyu	282,459	6,901	5
19.	Kotobukiya*	265,137	1,907	140
20.	Chujitsuya*	262,179	5,524	75

*Supermarkets. All other companies are department stores, except Kiosks.

Source: Japan Economic Journal, July 11, 1987.

Vertical Integration of Distribution Networks

The dominant role of wholesalers has been challenged in recent years by vertically integrated distribution systems established by large manufacturers to organize and control the channels of distribution. These are most powerful in industries where product differentiation is important, such as motor vehicles, consumer electronics, cosmetics, pharmaceuticals and cameras. Within the consumer electronics industry, for example, it is estimated that affiliated retailers account for 60 to 80 percent of the total sales of each manufacturer.

According to Hideto Ishida of the Japan Fair Trade Commission, vertically integrated distribution networks promote oligopoly power through:

- Exclusive dealership arrangements that prohibit retailers from selling the products of other manufacturers.
- Territorial restrictions that limit a retailer's sales to a specific geographic area.

- Limiting competition at the wholesale level by requiring retailers to purchase from designated wholesalers and restricting the sales of wholesalers to specified retailers.

- The organization of dealer associations by manufacturers to facilitate their ability to impose marketing plans on retailers.

These practices reduce competition by restricting the retailer's freedom to make independent business decisions.

There are several potential benefits associated with this type of distribution system. The close links between manufacturer and dealer are thought to improve customer service and provide producers with information on changes in consumer tastes. In addition, it reduces distribution costs by simplifying marketing channels. The savings, though, are unlikely to be passed on to consumers. The manufacturer's aim is to set the market price by preventing intrabrand price competition. The prices of differentiated products are likely to be higher, therefore, than under competitive conditions.

Impact on Imports

Although foreign governments and businesses have criticized Japan's distribution system as a nontariff barrier to trade, a 1985 Keidanren report concluded that "There is loud criticism of the Japanese distribution system, but studies have made it clear that, while much room remains for improvement, the system itself does not discriminate against foreign goods." The complexity of the system, however, makes finding an effective distribution channel a difficult problem for new entrants to the market, including imports. Moreover, the Japanese preference for stable, long-term relationships makes it difficult for new suppliers to win customers. A 1987 survey of major firms by the JFTC, for example, reported that 98 percent have been dealing with the same firm for more than five years. Imported goods may pose a risk since the retailer is uncertain whether the foreign producer accepts the Japanese custom of returning unsold merchandise.

In addition, the vertical integration of the distribution system is a formidable marketing weapon for some Japanese manufacturers and this creates barriers to new suppliers. Exclusive dealership requirements, for example, can prevent retailers from selling competing imported products.

Outlook

Japan's distribution system is in the midst of a major restructuring. The rising wealth and mobility of consumers is spurring the development of large retailers, whose sales per worker are much higher. With consumers demanding a larger variety of products than small stores can supply, the number of shops with less than five employees fell more than 100,000 between 1980 and 1985. The competitive pressures posed by the strong yen will also increase the emphasis on efficiency at the expense of traditional business practices.

Advances in technology will also help streamline the distribution system. Computer networks that transmit data across the many layers of the distribution system will help rationalize transport, storage, financing, wholesaling and retailing. Examples of new technology that will benefit the distribution system include POS (point-of-sale) systems and value-added networks. Agreement on interchangeability and standardization is required to take full advantage of these data networks.

The 1986 Maekawa Report called on the government to review existing restrictions to promote the "streamlining of distribution mechanisms." One possible change would be the repeal of the Large Retail Store Law. The United States complained in 1985 that this was impeding the import of foreign products by restricting sales outlets. While the impact of the law may be overrated, its repeal should promote greater efficiency in the retail sector. Any change, though, is unlikely in the near future, given the political strength of small retailers.

The report also urged Tokyo to "ensure the strict enforcement of the antimonopoly law" in order to prevent unfair business practices. One possible target would be business practices that discourage competition by allowing manufacturers to control distribution channels. Practices such as exclusive dealerships, which are illegal in the United States, are still permitted in Japan.

And finally, the report says the government should ensure that "nothing is done to unfairly prevent parallel imports." Parallel importers buy brand name products abroad ranging from cars to watches and resell them in Japan at prices that are sometimes as much as 50 percent below the prices charged on goods imported through sole agents. Competitive pressure from parallel imports may help reduce the high markups on foreign goods sold by sole agents. The JFTC has already warned sole agents to stop harassing parallel importers by refusing to repair the goods they import or threatening to cut off supplies to stores that handle parallel imports.

A more efficient distribution system will benefit Japan's consumers by reducing prices and expanding selection. In addition, it should help foreign firms increase their market share in Japan and sustain the surge in manufactured imports. According to the Ministry of International Trade and Industry, the volume of manufactured imports jumped 24.6 percent in 1986, accounting for a record high 41.3 percent of total imports.

The benefits of a more efficient system, though, would be partially offset by a decline in employment in the distribution system. Japan's wholesale and retail industries are often described as an employment program financed by consumers through higher prices. Elderly persons often use lump-sum retirement benefits to open a small store that will provide a stream of income. In 1986 employment in the wholesale and retail industries (including food establishments) rose by 210,000, more than offsetting the loss of 90,000 manufacturing jobs. A reversal of this trend would boost Japan's unemployment rate, which rose to a record 3.2 percent in May.

For further information, contact Randall S. Jones.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

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IN THIS ISSUE:

Data Suggests Japan's Trade Surplus Has Peaked 1

Japan-EC Conference Focuses On Trade 5

U.S., Japan Sign SDI Agreement 6

MITI Minister Reassures Administration On Strategic Export Controls 8

Ways And Means Subcommittee Approves Textile Bill 9

Notes: Senate Trade Bill; Specialty Steel 10

Data Suggests Japan's Trade Surplus Has Peaked

There is evidence that the 75 percent appreciation of the yen since February 1985 is finally beginning to lower Japan's trade surplus. After 17 consecutive quarterly increases in the dollar figures, the surplus in the April-June 1987 period fell 5.3 percent from the year-earlier level to $20.6 billion (on a customs clearance basis). The decline reflected a 15.6 percent jump in imports to $36.3 billion, the highest in six years plus a deceleration of export growth (see Table 1). In yen terms, the trade surplus fell even more sharply (see Table 2).

The turnaround in volume terms actually began last year (see Table 3), but was outweighed by changes in currency values this spring. During the first half of 1987 export volume was down 2.1 percent from a year ago, while real imports were up 5.7 percent. The change in export volume, though, remains

Table 1: Japan's Total Trade in Dollar Terms

(in millions of dollars)

	Exports (f.o.b.)	Change Over Year-Earlier Period	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982	$138,831	-8.7%	$131,931	-7.9%	$6,900
1983	146,928	5.8	126,393	-4.2	20,534
1984	170,114	15.8	136,503	8.0	33,611
1985	175,638	3.2	129,539	-5.1	46,099
1986	209,151	19.1	126,408	-2.4	82,743
1985: I	38,503	-1.3	32,513	-5.7	5,991
II	43,748	0.6	32,094	-7.0	11,654
III	43,909	2.7	31,239	-8.1	12,671
IV	49,478	10.3	33,693	0.5	15,785
1986: I	45,499	18.2	33,005	1.5	12,494
II	53,166	21.5	31,424	-2.1	21,742
III	54,768	24.7	30,153	-3.5	24,615
IV	55,718	12.6	31,826	-5.5	23,892
1987: I	51,478	13.1	31,939	-3.2	19,539
II	56,924	7.1	36,336	15.6	20,588

Table 2: Japan's Total Trade in Yen Terms

(in billions of yen)

	Exports (f.o.b.)	Change Over Year-Earlier Period	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982	Y34,433	2.9%	Y32,656	3.8%	Y1,776
1983	34,909	1.4	30,014	-8.1	4,895
1984	40,325	15.5	32,321	7.7	8,004
1985	41,956	4.0	31,085	-3.8	10,871
1986	35,290	-15.9	21,551	-30.7	13,739
1985: I	9,898	9.5	8,340	4.3	1,559
II	11,025	11.1	8,093	2.8	2,932
III	10,591	2.4	7,534	-8.3	3,057
IV	10,442	-5.3	7,118	-13.6	3,323
1986: I	8,674	-12.4	6,334	-24.1	2,340
II	9,119	-17.3	5,399	-33.3	3,720
III	8,632	-18.5	4,758	-36.8	3,874
IV	8,865	-15.1	5,060	-28.9	3,805
1987: I	7,962	-8.2	4,953	-21.8	3,009
II	8,152	-10.6	5,201	-3.7	2,951

surprisingly modest in light of the sharp rise in the yen. The success of Japanese firms in maintaining market share reflects their strategy of passing on only a fraction of the yen's higher value. This policy, though, has taken a toll on export earnings; the yen value of exports was down almost 10 percent in the first half of the year.

Table 3: Change in Volume of Japan's Exports and Imports

		Exports	Imports
1982		-2.4%	-0.6%
1983		8.7	1.3
1984		15.4	10.7
1985		4.7	0.2
1986		-1.4	13.3
1985:	I	6.9	0.6
	II	6.8	-0.4
	III	4.0	-2.8
	IV	1.8	3.3
1986:	I	-0.2	3.6
	II	-0.9	16.8
	III	-0.3	18.6
	IV	-4.2	14.4
1987:	I	-0.1	8.1
	II	-3.9	3.6

Despite the signs of progress, Japan's trade surplus in 1987 is likely to surpass last year's $82.7 billion. For the first six months the trade imbalance was $40.1 billion in Japan's favor, up from $34.2 billion in the first half of 1986. Nomura Research Institute, for example, is predicting that Japan's surplus will rise $2.5 billion in 1987.

Japan's surplus in merchandise trade, services and transfers (i.e. the current account) in 1986 was equivalent to 4.4 percent of the nation's gross national product. Tetsuo Kaneko, director general of the Economic Planning Agency, told the Diet in May that it would be reasonable to have a surplus equal to 2 percent, which would amount to about $50 billion at current exchange rates. A decline to such a level, though, will probably require several years. Since the country's exports are 65 percent higher than its imports, purchases of foreign goods must increase at a considerably faster pace than exports simply to prevent the surplus from rising. In addition, the income elasticity of import demand (the percentage increase in imports resulting from a 1 percent rise in income) is lower in Japan than in most other countries. If Japan grows at the same rate as other countries (as forecast by the Organization for Economic Cooperation and Development for 1987-88), the income elasticity effect may overcome the impact of the strong yen, widening the country's trade surplus. Of course, a sudden rise in the price of oil could quickly reduce the surplus. According to one estimate, if oil prices returned to their 1974-85 average real level, it would add $90 billion to Japan's import bill.

Table 4: Japan's Trade with the United States in Dollar Terms

(in millions of dollars)

		Exports (f.o.b.)	Change Over Year-Earlier Period	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982		$36,330	-5.9%	$24,179	-4.4%	$12,151
1983		42,829	17.9	24,648	1.9	18,181
1984		59,937	39.9	26,862	9.0	33,075
1985		65,278	8.9	25,793	-4.0	39,485
1986		80,456	23.3	29,054	12.6	51,402
1985:	I	13,346	6.8	6,771	1.3	6,575
	II	16,837	9.0	6,641	-1.6	10,196
	III	16,615	5.4	6,111	-9.8	10,504
	IV	18,480	13.9	6,270	-5.7	12,211
1986:	I	16,696	25.1	6,278	-7.3	10,418
	II	20,921	24.3	8,305	25.1	12,616
	III	21,280	28.1	7,525	23.1	13,755
	IV	21,559	16.7	6,946	10.8	14,613
1987:	I	18,003	7.8	6,961	10.9	11,042
	II	21,183	1.3	7,583	-8.7	13,600

Table 5: Japan's Trade with the United States in Yen Terms

(in billions of yen)

		Exports (f.o.b.)	Change Over Year-Earlier Period	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982		Y9,015	5.8%	Y5,991	7.9%	Y3,025
1983		10,179	12.9	5,855	-2.3	4,323
1984		14,221	39.7	6,364	8.7	7,858
1985		15,583	9.6	6,213	-2.4	9,369
1986		13,564	-13.0	4,918	-20.8	8,646
1985:	I	3,429	18.3	1,737	11.9	1,692
	II	4,244	20.4	1,674	8.8	2,569
	III	4,008	5.2	1,474	-10.0	2,534
	IV	3,903	-2.1	1,328	-18.7	2,575
1986:	I	3,191	-6.9	1,203	-30.7	1,988
	II	3,589	-15.4	1,421	-15.1	2,168
	III	3,355	-16.3	1,190	-19.3	2,165
	IV	3,429	-12.1	1,104	-16.9	2,325
1987:	I	2,786	-12.7	1,079	-10.3	1,707
	II	3,034	-15.5	1,084	-23.7	1,950

The prospects for a decline in Japan's surplus with the United States are not as bright. Although Assistant Treasury Secretary David Mulford has predicted a $7 billion improvement this year, the imbalance was $24.6 billion in the first half of this year, up from $23 billion last year (see Table 4 and 5). While European Community exports to Japan are running about 32 percent ahead of last year, U.S. shipments were down 0.3 percent in the first half of 1987. It should be noted, though, that Japan's imports from this country were unusually high in the January-June 1986 period due to large purchases of gold. One positive sign is that Japan's shipments to this country fell below the year-earlier level in June for the first time in 27 months, largely as a result of a 17.8 percent fall in motor vehicle exports.

Randall S. Jones

Japan-EC Conference Focuses On Trade

The bilateral trade situation dominated the July 9-10 semiannual meeting between Japan and the European Community. Both sides sought major concessions, but ended up mostly empty-handed. Common ground was only found on one trade-related area, though support for cooperation in science and technology was reiterated across a broad spectrum. The two sides came away from the meeting with sharply different outlooks, presaging continued frictions over trade.

In the face of almost certain criticism, Tokyo nevertheless reiterated its previous positions that EC exports of goods and services will receive non-discriminatory treatment, that exporters must exert more effort to penetrate the Japanese market, and that there will be no set goals for increased purchases of EC products. Japanese representatives also hit the community's late May decision to extend punitive tariffs to parts as well as finished products imported from Japan, claiming that the policy violates the General Agreement on Tariffs and Trade. But the EC is unhappy with the "screwdriver" factories several Japanese firms have established in Europe, and adopted the [illegible] to force Japanese assembly plants to increase the local content of their output. Tokyo also asked for a hike in EC import quotas on 108 items. On a more positive note, Japan agreed to increase access for European exports of medical equipment, pharmaceuticals and cosmetics.

The EC delegation, led by director general of external relations Leslie Fielding, was much more strident in its demands. Pointing to the growing trade deficit ($10.5 billion in the first half of the year, 26.4 percent above the same period last year), Mr. Fielding demanded "deeds, not words." He presented a list of world-class EC products, including aircraft and medical, electric and telecommunications equipment, asking that Tokyo allocate $1 billion to specifically reduce the bilateral trade imbalance. A drastic move is necessary, he charged, because of Tokyo's "dangerously slow" pace of liberalization. Japanese officials responded that imports of EC products had grown faster than exports during the first half of the year (32.3 percent versus 28.9 percent in dollar terms), a trend they expected to continue and thus reduce the imbalance. Even so, the EC pointed out that the deficit could widen to over $20 billion for all of 1987, far above 1986's $16.7 billion level.

The EC also lamented the negative impact of the U.S.-Japan semiconductor agreement on European prices for memory chips. The higher prices have hurt EC question is whether the proposal can withstand the presidential veto that the administration has promised. (Last year, the House failed to override a veto by just eight votes.) This time, the Democratic-controlled Congress is gearing up to gain as much political mileage from the confrontation as possible. There is even some talk of scheduling the override vote to coincide with "Super Tuesday" next March, when several textile-producing states in the South will hold presidential primaries.

A tactic like this may be necessary if legislators want HR 1154 to become law. According to one report, the House is still roughly 45 votes short of the requisite two-thirds majority for an override. In the Senate, supporters are also fighting against the odds right now. Still, a confluence of constituent considerations, economic factors and presidential campaign concerns could swing the vote against Mr. Reagan's veto.

Eileen Marie Doherty

Notes

Senate Trade Bill - After a month's debate the Senate approved S 1420, the omnibus trade package, on July 21 by an overwhelming 71-27 vote. Despite last-minute White House appeals to GOP legislators to oppose the bill, 19 Republicans joined 52 Democrats in casting a "yes" vote. All of the 27 who opposed the bill were Republicans. The administration wasted no time after the bill's passage in threatening to veto the legislation unless the final product is changed. At present, it appears that Congress stands a fair chance of overriding that veto; both the House and the Senate bills passed with more than the requisite two-thirds majority needed for an override. Still, some legislators have warned that they will change their vote to a "no" on the final bill if significant changes are not made during the conference committee. A detailed discussion of the provisions of the bill will be included in the next issue of JEI Report.

Specialty Steel - President Reagan has defied conventional economic wisdom and extended the import shield for U.S. specialty steel makers through September 30, 1989 (see JEI Report No. 24B, June 26, 1987). The White House justified its July 16 decision by citing "persistent global overproduction" of stainless steel and alloy tool steel, some of which it claimed is subsidized, as well as "trade barriers and distortive practices used by [U.S.] trading partners to protect their domestic industries and to stimulate exports." A spokesman noted that the same factors had persuaded the president in July 1983 to give domestic manufacturers four years of protection. But then as now the administration clearly hoped that its move would help contain protectionist pressures on Capitol Hill.

The new specialty steel protection plan is a modified version of the one that expired July 19. Flat-rolled products, which represented two-thirds of 1986 specialty steel imports, will continue to be subject to tariffs on top of the statutory rates of 9.5 percent or 10 percent for stainless sheet and plate and 8 percent to 11.5 percent for stainless steel strip. For all three products the extra duties will be 3 percent over the next 12 months and 1 percent in the final 15-month stretch of the relief period (see Table). Under the old program the added tariffs started at either 10 percent (sheet and plate) or 8 percent (strip) and dropped in stages to 4 percent during the July 20, 1986-July 19, 1987 period. Canada and Sweden, however, will still be the only important suppliers of flat-rolled products affected by the extra duties since shipments from the European Community (including Spain and Portugal), Japan and 14 other countries are covered by quotas under the White House's overall steel restraint program, which runs through September 1989.

Similarly, imports of stainless steel bar and rod and alloy tool steel will remain capped by quotas, although the limits will be raised over the course of the relief period (see Table). Allocations will again be negotiated with major suppliers, including Japan -- the top supplier of bar and rod and the number-two source of alloy tool steel -- and Sweden. Spain, the third-largest shipper, is also on the list because it joined the EC after the group agreed to restrict U.S.-bound steel shipments through September 1989. (In addition to imports from EC-10 countries, deliveries of bar, rod and tool steel from Austria and Brazil are outside the new restraint program since they are governed by other arrangements.) Since it will take time to work out the new quota allotments, the White House has extended the July 20, 1986-July 19, 1987 country allocations for 90 days.

New Specialty Steel Protection Program

Extra Tariffs

	7/20/87-7/19/88	7/20/88-7/19/89	7/20/89-9/30/89
Stainless Steel Sheet and Strip	3%	2%	1%
Stainless Steel Plate	3	2	1

Quotas

(in tons)

	7/20/87-10/19/87	10/20/87-7/19/88	7/20/88-7/19/89	7/20/89-9/30/89
Stainless Steel Bar	5,738	17,717	24,159	4,977
Stainless Steel Rod	3,307	10,213	13,926	2,869
Alloy Tool Steel	4,271	13,182	17,977	3,703

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JAPAN'S RESPONSE TO THE LATIN AMERICAN DEBT CRISIS

Summary

Recognizing the threat that the enormous debts of Latin American nations pose to the international economic order, Japan has initiated a series of programs that are designed to alleviate the strain on both debtors and creditors. For debtors, Tokyo has announced a $30 billion fund to recycle part of its current account surplus to the developing world. For creditors, the Finance Ministry has developed a scheme to minimize the burden that non-performing loans impose on Japanese banks. Given the complex nature of the debt crisis, it appears likely that in the future Japan will play a more active -- and perhaps leading -- role in developing ways to respond effectively to the problem.

Introduction

The fifth "anniversary" of the Latin American debt crisis will occur this year, marking Mexico's August 1982 announcement that it did not have adequate foreign exchange reserves to meet its debt obligations. Since then the debt situation has captured international attention and sparked intense controversies over ways to facilitate the repayment of staggering interest obligations to banks in the United States, Europe and Japan. The tricky part, of course, involves doing this without threatening the development goals of the debtors. Given the present situation in Latin America, meeting even the interest on outstanding loans is a strain on foreign exchange reserves, making creditors uneasily aware that the possibility of default continues to hover in the background (see Table 1).

Table 1: External Debt of Selected Latin American Countries, Yearend 1985

(in billions of dollars)

	External Debt	Banks	Ratio
Brazil	$107.3	$90.3	84.2%
Mexico	99.0	88.2	89.1
Argentina	50.8	44.1	86.8
Venezuela	33.6	33.4	99.5
Peru	13.4	8.1	60.7
Ecuador	8.5	6.3	73.8

Source: Ministry of International Trade and Industry, White Paper on International Trade, 1986.

In October 1985 Treasury Secretary James Baker announced a new strategy for dealing with the debt problem. Unlike previous initiatives -- most of which emphasized austerity -- the Baker Plan was designed to encourage economic free-market growth strategies that would allow debtors to fully service their obligations. The plan called for $9 billion in additional lending from the multilateral development banks and $20 billion from private banks over a three-year period in exchange for the implementation of economic adjustment measures.

The Baker strategy was embraced by the major creditor nations and was reaffirmed at the Venice economic summit last June. Within the United States, however, there are some policymakers who question its wisdom and plausibility. These opinionmakers -- most notably Sen. Bill Bradley (D, N.J.) -- maintain that it is naive to expect full repayment of the outstanding loans. Indeed, events in the first half of 1987 have prompted others to espouse that view. For example, in February Brazil announced that it was suspending interest payments on $68 billion worth of loans from foreign banks, sending a shiver of apprehension through the financial community. (By June, though, Brazil had indicated its willingness to make the repayments if it received another loan package.) In May Citicorp implicitly acknowledged the possibility of widespread Latin American default by announcing that it would transfer an extra $3 billion to its loan loss reserves; several other U.S. banks quickly followed suit.

Even Secretary Baker has admitted that his plan has not been as successful as originally expected and has urged U.S. banks to propose alternative strategies to deal with the situation. This announcement has been interpreted as a crossroads for the debt situation. In short, while the Baker Plan is still accepted by this country, policymakers are now searching for other solutions that will complement their present efforts.

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Japan's Position in Latin America

In this context eyes are turning toward Japan, which has the second-largest exposure to third world debt after the United States. While it is difficult to know the exact amount of Japanese private loans (since banks are not required to disclose these figures), most estimates put the value at about $30 billion. According to a report by the Wall Street Journal, most of these loans have gone to Mexico (about $13 billion) and Brazil (about $10 billion). The Bank of Tokyo, Ltd. is reportedly the largest Japanese private lender; one estimate puts its exposure at $6.6 billion. Bank of Tokyo officials, however, say that this figure is too high.

The yen's appreciation has brightened the picture somewhat for Japanese banks. Since 80 to 85 percent of their loans to the region are denominated in dollars, the yen book value of the obligations has plummeted by some 50 percent. Although one government official noted that some dollar loans were converted to yen when a portion of the debt was rescheduled in 1985, the rise of the yen has nonetheless produced a windfall for Japanese creditors worried about the viability of their loans.

Beside the obvious financial concerns of Japanese lenders, other factors draw their attention as well. First, development and debt problems in Latin America have already begun to threaten the smooth workings of the international economic system. This has extended to the U.S.-Japan trade relationship. Debtor nations, barely able to obtain enough dollars to meet their interest payments, are hardly in a position to import from the United States. As U.S. sales to the region have plummeted and helped raise this country's trade deficit, Congress has urged Japan to import more from the region in order to provide much-needed foreign currency. Moreover, it is all too clear that this link between debt and trade gives Capitol Hill yet another incentive to enact trade legislation targeted directly at Japan.

Tokyo often gives another reason for its concern. Latin America is home to more than a million people of Japanese ancestry; this fact is mentioned in nearly every government discussion of the region. Officials estimate that approximately 1 million live in Brazil; 40,000 in Paraguay; 20,000 in Peru; and 10,000 in Mexico. For the basic reason of cultural and ethnic affinity, Japan places a special significance on these countries.

Japan's Response to the Debt Crisis: General Policy

Tokyo lists several reasons for the fact that the debt situation in Latin America is so severe. For one thing, these countries adopted import-substitution development stategies that emphasized the creation of a diversified manufacturing base to enable them to become self-sufficient. On the whole, import substitution has been markedly less successful than the export-led growth policies of the newly industrialized countries in Asia and has led to soaring inflation, low savings and investment rates, and substantial capital flight. Add to these problems a failure to establish competitive domestic industries and the result has been economic crisis.

Nor have recent international events improved the situation. As the Ministry of International Trade and Industry remarks, the recent leveling off of U.S. economic growth has forced borrowers to implement austere adjustment measures. Similarly, the drop in petroleum prices greatly exacerbated the financial problems of oil-producing nations such as Mexico and Venezuela. MITI summed up the situation in the 1986 White Paper on International Trade, noting: "These developments raise fears that foreign debt will be an increasingly serious problem in the year ahead."

Recognizing that the crisis may get worse before it gets better, Tokyo has outlined a general policy toward debt problems. First, the government is prepared to consider deferred loan payments on a case-by-case basis; rescheduling, lowering interest rates and converting loans to another currency are all options in this regard.

Second, the debtor countries are expected to implement structural adjustments including measures to attract foreign investment and liberalize trade. Not surprisingly, the Japanese government suggests that import-substitution policies are not the best way to enhance international economic contacts. MITI also acknowledges that Japan should import more goods from Latin America. For the most part, Tokyo favors a market-oriented strategy, with as much emphasis on Japanese private-sector activity in the region as possible. This, of course, does not preclude government involvement. The Ministry of Finance, for one, points out that Japan has espoused a "multi-faceted endeavor" to reach a solution.

Should Loans Be Fully Repaid?: Baker Vs. Bradley

The Japanese government unconditionally supports the Baker Plan, which MITI commended in the 1986 White Paper on International Trade for "taking a mid- to long-term outlook in suggesting that future efforts to solve the world's debt problems focus on helping debtor countries improve their payment balances as their economies grow." Even in the face of increasing doubts in this country about the Baker Plan, MOF officials say that Tokyo is not reconsidering the proposal since it is the "only feasible and realistic" method for dealing with the crisis.

According to one government official, the only problem with the Baker Plan is that the United States has done very little to implement it. Another government representative disagrees, however, saying that because the issue is so complex, Japan should not expect too much from the United States. Indeed, the problems surrounding any solution to the debt crisis are significant. Most of the creditor nations believe the plan is correct in theory; the problem is translating it into action. The Baker initiative emphasizes continued private lending to Latin America but involves no incentives for participating banks. And while the promise of growth-oriented structural adjustment is intended to encourage loans from banks with a large stake in the region, many are loath to risk throwing good money after bad.

Another approach, this one Sen. Bradley's, argues that it is more realistic -- and ultimately better for the U.S. economy -- to consider some debt forgiveness. According to this plan, development institutions would approve another $3 billion in loans including money for structural adjustment, but no new loans would come from commercial institutions. Then, at an annual summit (to take place during the first three years of the new round of multilateral trade negotiations under the General Agreement on Tariffs and Trade), debtors would be eligible for an interest rate cut of 3 percentage points for one year on both commercial and official bilateral loans and a 3 percent per year reduction in the principal of those loans. In exchange, recipients would be expected to implement structural adjustment measures. Subsequent debt-relief packages would depend on how successfully the country used the previous year's package. According to Sen. Bradley, enacting some relief will facilitate development as well as allow the use of foreign exchange reserves for imports of U.S. and other foreign goods. This may cause some initial pain in the financial community, the New Jersey Democrat readily acknowledges, but will ultimately be better for the health of the developed and developing countries.

Just as Japanese officials are resoundingly in favor of the Baker Plan, so too are they consistently critical of the Bradley proposal. One called the plan "too drastic" and charged that the senator's proposal favored exporters over private banks. Another said simply, "debt forgiveness does not work." Because Tokyo places so much emphasis on the need for a market-oriented solution to the crisis, it fears that the scheme would dry up all future private lending to the region. Interestingly enough, however, some Japanese bankers accept the argument for a certain amount of debt forgiveness. In short, while the Bradley proposal has by no means gained a consensus within the Japanese banking community, government officials admit that its supporters are influential.

The Mexican Loan Package and the Cayman Islands Initiative

One of the first hints that Japan intended to expand its role in the debt situation came last year when Tokyo agreed to arrange a $1 billion loan to Mexico through the Export-Import Bank of Japan. The loan was to complement a $12 billion multilateral rescue package for Mexico, consisting of $6 billion from commercial institutions and $6 billion from development institutions. The magnitude of the Ex-Im loan -- especially to a country outside of Asia -- was interpreted by many as an indication that Japan was acknowledging its responsibility to do more to respond to third world debt issues.

Tokyo purposely held up its Mexican loan, however, until private creditors (in Japan and other countries) agreed to provide half of the $12 billion package. Given the reluctance of commercial banks to approve any new loans in Latin America, the government searched for an incentive. It was found in Japanese tax laws. Presently, Japanese banks are only permitted to set aside 5 percent of their loans as loan-loss reserves, of which only one-fifth is tax-deductible. Tax laws in Europe, by contrast, are often more generous. The banking community has been pressuring Tokyo to increase the amount of loans that are tax-deductible, but with little success. And although MOF remains opposed to changes in the tax code, it did approve a scheme that accomplishes much the same purpose.

The new initiative took the form of a paper company set up in the Cayman Islands by Japanese banks to buy a portion of their nonperforming loans to Mexico at a discount (see JEI Report No. 11B, March 20, 1987). In this way, the banks are able to write off their losses and thus substantially improve their net worth. As sole shareholders of the factoring company, any loan payments will come back to them in the form of dividends. Conversely, if the loans are not repaid, for accounting purposes the factoring firm rather than the banks will take the losses.

To date 28 banks have signed on, including Dai-Ichi Kangyo Bank, Ltd., Fuji Bank, Ltd., Sumitomo Bank, Ltd., Bank of Tokyo, Ltd. and Industrial Bank of Japan, Ltd. Each has contributed $3,000 in equity, thus raising a total of $84,000 for the company's initial capital base. Although MOF does not contribute financially to the scheme, it has not only approved the venture but has also (according to the Wall Street Journal) offered "guidance" on tax laws and procedures. Officials stress, however, that the initiative is no more than a bookkeeping procedure designed to help Japanese banks respond effectively to the debt situation.

For now, the banks are only authorized to sell Mexican debt to the factoring company. Government representatives hint, though, that the scheme could easily be expanded to include Brazilian and Argentine debt as well. The banks are certainly pleased thus far, but are undoubtedly going to continue to push for a change in the tax laws regulating write-offs for non-performing debts. Their chances of success do not appear bright in the near future. Prospects for expanding loan-loss reserves beyond the ceiling of 5 percent of total loans appear better and discussions in this regard are reportedly already occurring -- although MOF officials are reluctant to commit themselves on this score.

International Responsibilities of a Surplus Nation

At the same time that Tokyo wants to shield its banks from undue financial distress, it is also anxious to display evidence of its commitment to the health of the international economy. Thus, in early 1987 Prime Minister Yasuhiro Nakasone announced a $30 billion initiative to recycle part of Japan's current account surplus (some $86 billion in 1986) to the developing world.

Although many of the details are still being worked out, the rough outline is clear. One-third of the new aid (approximately $10 billion) will consist of subscriptions to multilateral aid institutions, much of which was proposed at last year's meetings of the International Monetary Fund and the World Bank (see JEI Report No. 37B, October 10, 1986). Of this, some $2.6 billion will make up Japan's FY 1988-90 contribution to the International Development Agency, the low-interest arm of the World Bank, which concentrates on the poorest developing countries.

Another $3.6 billion (3 billion in Special Drawing Rights) is slated for the IMF as a special facility for unusually critical situations that require "financial support beyond the usual recourse," while $2 billion -- a $200 million grant and $1.8 billion to be raised in the Tokyo capital market -- will go to a special World Bank fund. Most of the remainder of this part of the package consists of $1.3 billion in funds for the Asian Development Foundation, a window of the Asian Development Bank.

The second part of the package is an additional $20 billion designed to recycle money directly to the developing countries. The funds will be disbursed in three ways. First, Tokyo has pledged an additional $8 billion to multilateral lending agencies, including the World Bank, the Inter-American Development Bank, the Asian Development Bank and the African Development Bank. Second, some $9 billion will come from Japan's Overseas Economic Cooperation Fund, the Export-Import Bank of Japan and possibly private banks to co-finance World Bank loans. Projects will be chosen in close consultation with the World

Bank and will follow the strict lending standards of the bank. Finally, $3 billion has been set aside for Ex-Im Bank untied loans. Officials stress that, contrary to some initial U.S. reports, all the loans in the initiative will be untied.

The plan has received a warm welcome in the United States and the developing countries, and has been interpreted as evidence that Japan will use more of its surplus to promote international economic goals. Indeed, Tokyo has been eager to portray the initiative in this way. It is partly due to American enthusiasm that there has been a clamor for more details. Tokyo is not yet ready to elaborate, stressing that the $30 billion plan is a "loose package" and that government officials are still working out the specifics.

A few facts appear clear, however. For example, although some government officials are sympathetic to the idea of making the plan strictly a response to the debt crisis, they recognize that this would identify it as a Latin American fund -- despite the fact that nations in Southeast Asia and Sub-Saharan Africa also have sizable debts. Since Japan has always emphasized its role in Asia, officials are reluctant to exclude the Southeast Asian developing countries from the initiative and have already promised the Association of Southeast Asian Nations that it will receive a share of the $30 billion.

Still, a major purpose of the recycling plan is to display Tokyo's commitment to non-Asian developing countries. Moreover, since officials point out that the initiative is aimed primarily at middle-income developing countries (as opposed to many of the destitute countries in Sub-Saharan Africa), it appears likely that Latin America will receive a large share -- perhaps the majority -- of the recycling funds.

Finance Ministry officials say that much depends on the requests received. Other spokesmen have indicated that first consideration may go to the countries that are judged to have adequate "absorptive capacity." By giving special consideration to countries with promising economies, not only will the funds be efficiently spent but officials also hope that such countries will serve as growth models for other regional debtors. Brazil is the first country that comes to mind in this category. Another factor that may come into play is the extent of Japan's relations with the country in question, including the amount of debt held by Japanese banks, the volume of trade, the amount of private investment and the number of Japanese immigrants residing in the country. Brazil and Mexico are both good candidates in this regard. Conversely, according to one official, since countries such as Venezuela have limited contacts with Japan, they will probably not be as likely to receive funds.

Given the emphasis on the debtor countries' potential for growth and the desirability of private-sector participation, the plan is unquestionably compatible with the Baker initiative. And certainly Japanese officials have no desire to label it otherwise. Some do admit, however, that the proposal contains no direct incentive to encourage increased private-sector lending; rather the initiative only sets "guidelines for private banks." In this regard, it may run up against the same problem as the Baker plan: banks are reluctant to commit more money when they are unsure about the worth of their outstanding loans. Consequently, officials are making no promises -- only that private banks may co-finance some loans with the World Bank. Other than that, the recycling program will depend on government funds and monies raised in Tokyo's capital market.

Debt-Equity Swaps: A Limited Remedy

One response to the debt problem that has received considerable publicity and enthusiasm is swapping debt for equity in a borrower's industry. In short, Japanese investors can buy Latin American debts in a foreign secondary debt market (where questionable loans to the third world are sold at significant discounts). Next, the investors exchange the discounted dollar loans for local currency, often at rates lower than exchanging yen on the foreign exchange market. Finally, the Japanese firm can use the local currency to invest in a project or engage in a joint venture in the debtor country. Normally, before the process is set into motion, a pre-arranged deal outlining each of the steps is made among all involved parties and the debtor government.

The enthusiasm for debt-equity swaps stems from the fact that everyone wins something in these deals. By selling the debt, the banks can take a tax write-off on their losses and improve their books. By puchasing the debt with local currency, the host country no longer has to worry about finding enough foreign exchange to make its payments. And by purchasing the debt at a steep discount, the Japanese investor can undertake the foreign venture at far less cost than otherwise.

According to the Far Eastern Economic Review, the Industrial Bank of Japan is the first Japanese bank to have brokered a debt-equity swap. Under the deal, Nissan Motor Co., Ltd. and other Japanese firms used discounted debt to invest in a joint venture for hotel construction in Mexico. Kawasaki Steel Corp. and Japan Air Lines Co., Ltd. are among other Japanese firms that have been involved in debt-equity exchanges -- although primarily in the Philippines.

Although there is still room for more swaps, the strategy is limited. For one thing, the secondary market for these loans -- some $5 billion in trading volume in 1986 -- is just a drop in the bucket compared to the staggering amount of third world debt. Moreover, Japanese investors will not invest in projects that are unlikely to yield a profit. According to one Japanese official, there are few countries that are economically and politically sound enough to attract private investors in great numbers. He could name only three: Brazil, Mexico and Chile. And even in Mexico, he warned, the threat of nationalization looms large.

Thus, although debt-equity conversions are bound to have a positive effect on the debt situation, no one expects them to be a panacea. Nonetheless, they are welcomed by the Japanese government, especially since they represent a response that reflects the market conditions of the developing countries and the market value of the loans involved. Too, they encourage more private-sector exposure in Latin America, which may stimulate further contacts in the future.

Role of Private Investment and Official Development Assistance

In light of Tokyo's insistence that the best solution to the debt crisis is increased private-sector involvement, it is no surprise that the issue of investment often comes up in government discussions of debt and development. For example, the 1985 White Paper on Economic Cooperation stated that "direct investment is also important [to meet development objectives] and to contribute to the transfer of technology and know-how to countries that urgently need them. Since this is done without directly involving a debt burden, direct investment should constitute a major part of development funds for developing countries." Officials go on to say that direct investment will facilitate the repayment of foreign debt and that a review of tax incentives and other financial measures to encourage foreign investment should be set in motion.

But private investors continue to shy away from the Latin American countries, citing high inflation rates, political instability and continued economic crises (see Tables 2 and 3). Moreover, although programs exist to insure commitments against non-commercial risks, investors are more interested in putting their funds in the United States or Europe -- or at least in developing countries that are more economically and politically stable, physically closer to Japan and culturally similar: that is, Southeast Asia.

Tokyo admits that private investment in Latin America is unlikely to expand significantly in the near future. Although officials continue to search for ways to encourage private flows abroad, they insist that it is primarily the responsibility of the debtor countries to provide conditions conducive to foreign investment.

Table 2: Japan's Foreign Direct Investment in Latin America by Country, FY 1982-FY 1986

(in millions of dollars)

	FY 1982	FY 1983	FY 1984	FY 1985	FY 1986	Cumulative March 31, 1987
Panama	$722	$1,223	$1,671	$1,533	$2,401	$8,841
Brazil	322	410	318	314	270	4,857
Mexico	143	121	56	101	226	1,556
Peru	185	---	6	10	---	696
Latin America	1,503	1,878	2,290	2,616	4,737	20,373
North America	2,905	2,701	3,544	5,495	10,441	37,406
Europe	876	990	1,937	1,930	3,469	14,471
Oceania	421	191	157	525	992	5,234
Asia	1,384	1,847	1,628	1,435	2,327	21,790
Africa	489	364	326	172	309	3,678
Middle East	124	175	273	45	44	3,016
Total Foreign Direct Investment	7,703	8,145	10,155	12,217	22,320	105,970

Source: Ministry of Finance

Table 3: Japan's Foreign Direct Investment in Latin America by Sector, March 31, 1987

(in millions of dollars)

	Cumulative March 31, 1987
Manufacturing Sector	$4,833
Food	199
Textiles	419
Wood Products	197
Chemicals	559
Metals	1,687
Nonelectric Machinery	356
Electric Machinery	324
Transport Equipment	982
Other	110
Nonmanufacturing Sector	15,474
Agriculture and Forestry	179
Fisheries	103
Mining	1,525
Construction	200
Trade and Sales	1,232
Banking, Finance and Insurance	4,275
Services	681
Transportation	6,058
Real Estate	19
Other	1,203
Branch Offices	43
Real Estate Transactions	23
Total	20,373

Source: Ministry of Finance

Another strategy that the government endorses is the use of official development assistance to promote economic development, thus improving the debtor countries' ability to meet their accumulated obligations. But here, too, problems arise. Roughly 65 to 70 percent of Japan's ODA goes to Asia, and only 10 percent to Latin America. Although Tokyo has plans to diversify the regional distribution of its aid flows, it is difficult in the case of Latin America. Regulations restrict the government's ability to give official yen loans to countries with a per-capita income above a certain level. Moreover, countries that are in arrears in payments are not eligible unless the unpaid debt is rescheduled. Thus, it is not surprising that few ODA loans have been made to the region in recent years (see Table 4). Still, officials recognize the value of official economic assistance in promoting Latin American development and have pledged to use ODA funds to tackle debt and development problems in the region.

Table 4: Japan's Aid to Selected Latin American Countries, 1981-85*

(in millions of dollars)

	1981	1982	1983	1984	1985
Mexico					
Grants	$7.47	$7.47	$9.59	$8.26	$10.61
Loans	3.21	3.38	37.26	22.37	8.90
Total	10.68	10.85	46.85	30.62	19.51
Argentina					
Grants	2.56	2.85	3.93	7.11	6.66
Loans	6.12	0.63	1.68	1.56	1.78
Total	8.68	3.48	5.61	8.67	8.44
Bolivia					
Grants	16.46	13.19	9.47	15.36	15.03
Loans	14.74	16.63	25.23	14.27	7.58
Total	31.20	29.82	34.70	29.62	22.61
Brazil					
Grants	16.05	14.64	14.62	15.75	15.70
Loans	15.31	35.83	12.50	19.85	24.91
Total	31.36	50.47	27.12	35.59	40.61
Chile					
Grants	3.21	5.90	3.39	3.57	8.98
Loans	-1.35	-1.53	0.10	-1.90	-2.25
Total	1.86	4.37	4.09	1.67	6.73
Colombia					
Grants	3.97	2.49	3.36	6.27	5.39
Loans	8.43	4.96	11.85	18.36	8.50
Total	12.40	7.45	15.21	24.62	13.89
Ecuador					
Grants	1.43	4.24	3.06	1.53	2.04
Loans	0.50	-0.83	-0.48	0.46	-0.12
Total	1.93	3.41	2.58	1.99	1.92
Paraguay					
Grants	20.08	12.88	10.29	14.04	16.67
Loans	3.05	17.57	11.46	8.98	2.18
Total	23.13	30.45	21.75	23.01	18.85
Peru					
Grants	12.60	16.29	26.78	14.77	13.25
Loans	6.19	-3.35	18.30	10.08	8.20
Total	18.79	12.94	45.08	24.85	21.45
Venezuela					
Grants	0.91	0.92	1.39	1.06	1.22
Loans	0.13	0.00	-0.15	-0.15	-0.15
Total	1.04	0.92	1.24	0.91	1.07

*Loans may include other official yen credits.

Source: Ministry of Foreign Affairs.

Cooperation with the United States: A More Independent Role for Japan?

Despite the unilateral initiatives discussed above, the government believes that a multilateral approach is necessary to effectively fight the problem. In keeping with this perspective, Japan is a member of the Paris Club, an informal group of creditors that convenes periodically to renegotiate and reschedule debt. Moreover, Japan participates in global and regional multilateral development banks -- including the Inter-American Development Bank, which it joined as a nonregional member in the mid-1970s. (Private-sector cooperation, too, is beginning to expand. This was demonstrated recently when nine major Japanese banks agreed in principle to help BankAmerica Corp. recover from some $350 million in losses by underwriting $250 million of subordinated capital notes.)

Until a short time ago Tokyo was willing to follow the U.S. lead in tackling debt issues. Gradually, the government has begun to feel that it should work more independently -- as long as its initiatives receive U.S. approval. All indications are that it has begun to do so. In addition to the Cayman Islands factoring company and the recycling fund, Japan has become the first developed country to sign the convention ratifying the Multilateral Investment Guarantee Agency, which will guarantee members' investments in developing countries against non-commercial risks (see JEI Report No. 22B, June 12, 1987). Originally, Tokyo said it would wait until the United States officially adopted the convention.

Japanese officials say that one problem they have with following the U.S. position on debt issues is quite simply that they do not always understand the Washington viewpoint since intra-governmental struggles are often publicized. For example, officials have expressed concern about current attitudes in Congress, especially recent additions to the Senate omnibus trade bill that link U.S. capital subscriptions to multilateral lending agencies with domestic trade concerns.

Will Japan play a more independent role in developing a solution to the international debt crisis? Probably, say government representatives, although they hasten to point out that this is more a "natural course of events" for a surplus country than a specific policy decision. Nor should this be interpreted as having significant political implications for the U.S-Japan relationship. Rather, they say, it is a logical development that reflects the growing international importance of Japan's economy and financial resources. In the best of all possible worlds, of course, it would be the Japanese private sector that would find a relatively smooth, market-oriented solution. Given the obvious reluctance of the private sector to make further commitments, however, the Japanese government may have to embrace an even more active role in finding an answer that is acceptable to debtor and creditor countries alike.

For further information, contact Eileen Marie Doherty.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

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JAPAN · ECONOMIC · INSTITUTE

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IN THIS ISSUE:

Senate Passes Trade Bill 1

Japan's Soaring Capital Outflow
To United States 3

Tokyo Debates Toshiba Machine Sales 6

U.S.-Japan Business Talk 7

Tokyo Announces New Supercomputer
Procurement Regulations 9

Notes: Supplementary Budget Approved;
Text Of SDI Agreement With Japan 10

Senate Passes Trade Bill

On July 21 the Senate passed S 1420, the omnibus trade bill, by a resounding 71-27 vote. Supporters of the legislation pointed enthusiastically to the fact that more than two-thirds of the Senate voted for the bill. (In order to override a presidential veto, 67 "yes" votes are required.) Nonetheless, it would be premature to conclude that some version of the bill will definitely be enacted into law. Several legislators who voted for S 1420 indicated that they will not support the final bill unless objectionable provisions are deleted by the conference committee.

The principal points of the Senate bill are summarized below:

- The bill renews the president's authority to submit trade agreements for fast-track approval. However, congressional participation would be

On the other hand, there is some anger at the president's last-minute appeal to GOP senators to vote against S 1420 on the grounds that this jeopardized the bipartisan spirit that had been present during the crafting of the legislation. The president's resort to partisan appeals and consistent veto threats may prompt intransigence rather than cooperation among the conferees.

Reaction from Japan has been vocal. After the vote several Japanese officials expressed dismay at the legislation, charging that it was blatantly protectionist and contained provisions contrary to the General Agreement on Tariffs and Trade. Of the "super 301" provision, an official Japanese statement read that "this section not only runs counter to the spirit of due process by making absolutely one-sided prejudgments about Japan, but also makes a mockery of the Japanese achievement over the years in dramatically enhancing market access, heightening the emotional reaction in Japan and seriously frustrating the will on the part of Japan to continue its pursuit of further market opening and macroeconomic/structural policies."

Eileen Marie Doherty

Japan's Soaring Capital Outflow To United States

The net flow of long-term capital from Japan to the United States nearly doubled to $65.7 billion in 1986, reflecting this country's continued reliance on foreign capital to fund its large government budget deficit and private business investment. Securities, principally bonds, remained the primary form of investment, accounting for 85 percent of the total (see Table 1). There was also a significant jump in direct foreign investment from $2 billion in 1985 to $7.8 billion last year.

The net long-term capital flow exceeded Japan's current account surplus with this country, which rose to $53.8 billion last year. The merchandise trade balance, the major item in the current account, climbed to $54.9 billion in Japan's favor as a result of a 22.5 percent jump in exports. On the services account, though, Japan continued to run a deficit with the United States, as its surplus in investment income and transportation failed to balance deficits in travel, patent royalties and management fees. But the rise in net investment income to $3.2 billion did push the services account toward balance.

Foreign direct Japanese investment has been encouraged by the strong yen, which has made overseas investments less expensive, as well as by the need to cut costs to remain competitive and the threat of protectionism. With the exponential growth in overseas investment, the Economic Planning Agency predicts that the proportion of manufacturing carried out abroad by Japanese firms will rise from 4.3 percent in 1984 to 8.2 percent in 1993, although it will still be less than half of the 18 percent to 20 percent shares held by the West German and U.S manufacturing industries. The United States remains a prime location for Japanese investment, accounting for over half of the worldwide total in 1986 (see Table 2). And this trend is likely to continue: in an EPA survey of firms that expect to invest abroad during the next three years, 66.6 percent view North America as a probable site, followed by 55.3 percent for the newly industrialized countries of Asia.

Table 1: Japan's Balance of Payments with the United States, 1982-86

(in millions of dollars, IMF value basis)

	1982	1983	1984	1985	1986
Merchandise Trade Balance	$15,131	$21,211	$36,704	$42,988	$54,919
Exports	36,477	43,057	60,479	65,617	80,385
Imports	21,346	21,846	23,775	22,629	25,466
Services Balance	-677	-1,884	-1,495	-1,012	-585
Transportation	-733	-573	-37	110	243
Travel	-1,274	-1,319	-1,369	-1,329	-2,012
Investment Income	2,140	1,280	1,379	2,268	3,231
Other	-810	-1,272	-1,468	-2,061	-2,047
Official	1,148	1,314	1,397	1,495	1,931
Private*	-1,958	-2,586	-2,865	-3,556	-3,978
Unilateral Transfers Balance	-120	-176	-191	-249	-552
Official	-11	-18	-44	-27	-92
Private	-109	-158	-147	-222	-460
Current Account Balance	14,334	19,151	35,018	41,727	53,782
Long-Term Capital (net)	-1,700	-5,541	-14,814	-33,163	-65,650
Direct Investments (net)	-1,423	-1,041	-3,180	-2,043	-7,774
Trade Credits (net)	-788	-190	-195	-587	-334
Loans (net)	-243	-329	-477	-716	-690
Securities (net)	1,248	-3,943	-10,591	-29,874	-55,944
Other (net)	-494	-38	-371	57	-908
Basic Balance	12,634	13,610	20,204	8,564	-11,868

*Includes such items as management fees, patent royalties and nonmerchandise insurance.

Note: For long-term capital transactions, credits (+) indicate net inflows and debits (-) indicate net outflows.

Source: Bank of Japan

According to Bank of Japan data, U.S. securities accounted for about half of the $102 billion worth of Japanese purchases of foreign securities in 1986. Given the 42.4 percent drop in the dollar since February 1985, investors have been hurt by this emphasis on U.S. financial instruments. The Japanese life insurance industry, for example, which holds an estimated Y8 trillion ($53.3 billion at Y150=$1.00) in foreign bonds, suffered exchange losses of Y2.2 trillion ($14.7 billion) in FY 1986 on top of Y944 billion ($6.3 billion) the preceding year. These large losses have reportedly encouraged some diversification into securities denominated in European currencies. Sumitomo Mutual Life Insurance Co., Ltd., for instance, has cut the proportion of dollar assets in its total foreign currency-denominated investments from 80 percent last year to 50 percent.

Table 2: Japan's Regional Balance of Payments, 1986

(in millions of dollars, IMF value basis)

A. Services

	United States		European Community		Other Countries		Other*		World	
	Credits	Debits	Credits	Debits	Credits	Debits	Credits	Debits	Credits	Debits
Transportation	$3,778	$3,535	$2,056	$1,840	$5,482	$8,478	$0	$0	$11,316	$13,853
Travel	641	2,653	150	1,333	671	3,243	1	0	1,463	7,229
Investment Income	8,520	5,289	7,446	7,069	11,390	7,164	1,730	91	29,086	19,613
Other	5,669	7,716	1,451	4,029	4,629	6,163	86	29	11,835	17,937
Total	18,608	19,193	11,103	14,271	22,172	25,048	1,816	120	53,700	58,632

B. Long-Term Capital

	United States		European Community		Other Countries		Other*		World	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
Direct Investments	$-7,973	$199	$-2,748	$54	$-3,759	$-27	$0	$0	$-14,480	$226
Trade Credits	-342	8	-1,088	1	-406	-49	0	0	-1,836	-40
Loans	-612	-78	-1,102	64	-8,217	2	650	-22	-9,281	-34
Securities	-49,395	-6,549	-40,624	11,611	-7,286	-5,381	-4,672	864	-101,977	545
Other	-864	-44	-555	1	-612	-30	-2,490	10	-4,521	-63
Total	-59,186	-6,464	-46,117	11,731	-20,280	-5,485	-6,512	852	-132,095	634

*Includes international institutions and unallocated flows.

Note: For long-term capital transactions credits (+) indicate net inflows and debits (-) indicate net outflows.

Source: Bank of Japan

According to many analysts, Japanese investors' ability to diversify away from dollar-denominated securities is limited by the large size of their portfolios. At the same time, the rise in U.S. interest rates and the recent stability of the dollar has renewed interest in U.S. securities, contributing to a record $14.1 billion in net purchases of foreign bonds in June. At present, a 10-year U.S. bond yields about 5 percentage points more than an equivalent Japanese security. Robert Brusca of Nikko Securities Co. International Inc. in New York calculates that the yen would have to appreciate by an additional 60 percent over the next decade in order for Japanese investors to make less than they would have if they had held yen bonds over the same period.

Randall S. Jones

Tokyo Debates Toshiba Machine Sales

Although Prime Minister Yasuhiro Nakasone has condemned the sale of sophisticated milling machines by Toshiba Machine Co., Ltd. to the Soviet Union as betraying the Japanese people, opinion is still divided on the damage incurred by the incident and the appropriate response by the government. While most observers agree that the sale was one of several elements that enabled the Soviets to manufacture significantly quieter submarines, many insist that other aspects of the program -- including propeller designs, internal drives and more efficient hull configurations -- were at least equally responsible for the improvements, none of which involved the Japanese company.

The disagreement over the actual extent of the damage done by Toshiba Machine is not simply an exercise in avoiding responsibility. The diversity of views being expressed represents profound differences in Japanese and American perceptions of strategic threats. Furthermore, the discussions serve as the political basis that will help form the response by the cabinet to preventing future leaks of advanced technology to potentially hostile powers.

The first issue at hand is the nature of the threat facing Japan. One of the most perplexing -- and troubling -- aspects of the Toshiba Machine incident is the failure on the part of the Japanese public to realize that the improved capabilities of Soviet submarines constitute a threat not only to the United States but also to Japan and the Western alliance. There has been a notable absence in this debate of the link between the technology involved and Japan's security. Rather, there is a perception that the United States is irritated by the company's actions because they threaten U.S. security.

This reflects the postwar Japanese ambivalence toward the Soviet Union and the more recent conflict between identifying the country as an overt threat to the nation's security and a potential market for Japanese products. Despite the growing readiness in Japan to name the U.S.S.R. as the primary threat to the country's security, there never has been unanimous agreement about the nature, extent or appropriate response toward that threat. Furthermore, the reaction of those skeptical of the seriousness of the Soviet threat reflects either a lack of appreciation or a basic disregard for the fundamental assumptions underlying the nature of the U.S. security guarantee to Japan -- namely, that Japan's self-defense rests heavily on the United States' ability to extend a credible deterrent threat. That this credibility is undercut by such advances as improved Soviet submarines, particularly in terms of the U.S. extension of a "nuclear umbrella" over Japan, appears largely absent from the general public's perception.

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IN THIS ISSUE:

Tokyo Moves On Fiscal Policy 1

Japan's Capital Outflow Swells 4

Tokyo Tackles Problem Of Rising Land Prices 6

Tokyo, Washington To Cooperate On Soviet Submarine Detection 7

Japanese Lose Share In U.S. Car Market But Complaints Continue 8

Notes: 1987 "Blue Book" Released 10

Tokyo Moves On Fiscal Policy

July 31 was a busy day for Yasuhiro Nakasone's cabinet. Both a tax plan for the current fiscal year and spending guidelines for fiscal 1988 were approved. Although one-quarter of fiscal 1987 has already passed, the government is still operating under FY 1986 tax rules because intense opposition party resistance prevented consideration of a tax package earlier this year (see JEI Report No. 17B, May 1, 1987). At the same time, a surprising surge in financial and real estate activity yielded higher than expected revenues, making a stimulative fiscal policy more palatable. The revenue picture is so positive that, for the first time in several years, the Ministry of Finance is planning to allow discretionary general account expenditures to rise in fiscal 1988. After being bound by austerity, fiscal policy is suddenly Tokyo's tool of choice.

The guidelines for compiling the FY 1988 general account budget reveal a 1.8 percent increase to Y33.2 trillion ($221.3 billion at Y150=$1.00) in discretionary spending, the first increase planned since FY 1983. When mandatory items (interest payments on the national debt and transfers to local governments) are included, projected total general account expenditures rise to approximately Y54.8 trillion ($365.3 billion), 1.2 percent above FY 1987's guideline. The principal reason for the increase is MOF's decision to allow capital outlays to remain at year-earlier levels rather than seek a 5 percent reduction. Under this new rule, public works will be increased by approximately Y1.2 trillion ($8 billion) or 20 percent. MOF's guideline calling for a 10 percent reduction in current operating budgets remains in effect, however, cutting an estimated Y350 billion ($2.3 billion) from total spending.

Defense spending and official development assistance will continue to receive special treatment. Defense outlays are expected to rise 6.2 percent or Y218 billion ($1.5 billion) to Y3,735.4 billion ($24.9 billion), while ODA is projected to jump 8.6 percent or Y56.6 billion ($377.3 million). While the defense hike guideline is the lowest since FY 1982, the anticipated increase in ODA is well above FY 1987's 7.5 percent level, reflecting Tokyo's commitment to play a greater role in global development. Other items slated to receive increases include: salaries (Y495 billion or $3.3 billion), social welfare (Y16.9 billion or $112.7 million) and science (Y24 billion or $160 million). Thanks to low world prices for oil during the past year, energy-related outlays will be reduced by Y129 billion ($860 million).

The Finance Ministry reported that FY 1986 general account revenues totaled Y56,489.1 billion ($376.6 billion), Y2,848.7 billion ($19 billion) more than expected. Despite the negative impact of the yen's appreciation on corporate and personal income, the surplus was generated by a boom in financial and real estate tax receipts -- hardly surprising since land prices have paralleled the ascent of equity market indexes over the past year. Local governments will receive Y575.5 billion ($3.8 billion) of the windfall, while the central government's share will help fund the FY 1987 supplementary budget and planned income tax reductions. MOF also reported that higher-than-projected revenues eliminated the need to issue Y240 billion worth of deficit financing and construction bonds in FY 1986, reducing the shortfall of total general account outlays.

Tax evasion in FY 1986 also reached record heights, ministry records show. MOF investigations revealed that Y57.2 billion ($381.3 million) in income went unreported, translating into tax and penalty losses of Y37.4 billion ($249.3 million). Of the 179 cases prosecuted by the National Tax Agency, eight involved unreported income of over Y1 billion ($6.7 million) and 38 uncovered avoidance of over Y400 million ($2.7 million) that averaged out to Y300 million ($2 million). The figures were the worst ever, officials said.

Hoping to improve the situation, the government's FY 1987 tax package addresses this and other areas. While income reporting requirements will be strengthened, income tax reduction and taxes on interest income are the major issues. Because the government was unable to win Diet approval for a new 5 percent value-added tax, the planned personal income tax reduction was scaled back to Y1.3 trillion ($8.7 billion) for FY 1987. This will be achieved by reducing the number of national tax brackets from 15 to 13 and by reducing tax rates; the top marginal rate falls from 70 percent to 60 percent, while the lowest rate of 10.5 percent will apply to taxable incomes of Y1.2 million

($8,000) rather than Y500,000 ($3,333). Low- and middle-income earners will clearly receive the biggest share of the tax cut -- a tactic aimed at softening opposition party resistance (see Table 1).

Table 1: Impact of Proposed Income Tax Changes

Annual Taxable Income (Y millions)	Current Tax (in yen)	Average Rate	Proposed Tax (in yen)	Average Rate	Tax Cut (in yen)	Percent Reduction
Y3	Y78,125	2.6%	Y48,450	1.6%	Y29,675	38.0%
4	215,750	5.4	168,250	4.2	47,500	22.0
5	394,050	7.9	322,300	6.4	71,750	18.2
6	614,450	10.2	518,500	8.6	95,950	15.6
7	890,200	12.7	771,600	11.0	118,600	13.3
8	1,204,400	15.1	1,053,200	13.2	151,200	12.6
9	1,538,800	17.1	1,355,600	15.1	183,200	11.9
10	1,887,100	18.9	1,698,800	17.0	188,300	10.0
12	2,724,850	22.7	2,604,150	21.7	120,700	4.4
15	4,182,250	27.9	4,065,750	27.1	116,500	2.8
20	7,008,250	35.0	6,891,750	34.5	116,500	1.7
30	13,504,150	45.0	13,120,100	43.7	384,050	2.8

Note: Based on a salaried-income family with two children filing a joint return.

Source: Asahi Shimbun, August 1, 1987.

Nevertheless, the opposition points out that the proposed reduction is only half as much as originally planned since several scheduled deductions have been dropped and a reduction in corporate tax rates has been postponed. To counter this the government is emphasizing the personal tax reductions planned for fiscal 1988: Y900 billion ($6 billion) in national income taxes and Y500 billion ($3.3 billion) in local income taxes. Eventually, under the government's plans, individual taxes will be cut by a total of Y3 trillion ($20 billion): Y2.25 trillion ($15 billion) in national taxes and Y750 billion ($5 billion) in local taxes. A timetable for this final stage is not included in the bills, however.

Opposition parties are not only unimpressed, but are very upset because the government is going ahead with plans to reform the popular maruyu tax-exempt savings system, which exempts interest income on particular postal savings accounts of up to Y3 million ($20,000). Beginning January 1, 1988 a flat 20 percent tax will be levied on interest income (see Table 2). The only exception is interest earned by senior citizens (over 65 years), fatherless families and the physically handicapped; for these groups the tax-exempt ceiling will be raised to Y9 million ($60,000). In addition, personal accounts at private banks that currently qualify for maruyu treatment will be taxed at the new 20 percent rate, except for housing and pension accounts, which will be taxed at a rate of 5 percent. The proposal contains several concessions to the opposition: originally the new taxes kicked in on October 1 of this year; the ceiling for surviving maruyu accounts was originally the same Y3 million ($20,000); and housing and pension accounts were to be taxed at a 10 percent rate.

Table 2: Impact of Interest Income Tax Reform

(in thousands of yen with percentage change in parenthesis)

Annual Taxable Income	Y2,800	Y4,210	Y5,350	Y6,720	Y10,180
Interest Income	1,930	3,320	5,250	5,420	8,790
Current National and Local Income Taxes	500	2,300	4,330	7,500	18,330
Proposed National and Local Income Tax Reduction	-280	-500	-740	-1,100	-1,820
	(55.8%)	(21.7%)	(17.1%)	(14.7%)	(9.9%)
Interest Income Tax	140	240	310	390	630
Total Tax Change	-140	-260	-430	-710	-1,190
	(28.2%)	(11.3%)	(10.4%)	(9.5%)	(6.5%)

Note: Based on a salaried-income family with two children filing a joint return.

Source: Asahi Shimbun, August 1, 1987.

The opposition parties remain adamantly against the changes and are boycotting Diet proceedings, charging that the Liberal Democratic Party is ignoring a pledge to respect the views of a special joint tax committee (see JEI Report No. 29B, July 31, 1987). A similar boycott during the last regular Diet session forced the government to withdraw its value-added tax proposal. If no progress is made before the 10-day August 8 recess, this package may also face defeat. Prime Minister Nakasone will undoubtedly pull out all the stops to win its passage before his term as Liberal Democratic Party president ends October 30. Opposition parties, on the other hand, will surely try to prevent this. If public sentiment swings in favor of the opposition on this issue as it did on the value-added tax plan, this part of the government's fiscal plan could be shattered.

Jon Choy

Japan's Capital Outflow Swells

Japan's balance of payments in the first half of 1987 indicates that it continues to be a major supplier of capital to the world, reflecting the country's high saving rate. The net long-term capital outflow totaled $76.7 billion, up 60.2 percent from the first half of 1986 (see Table 1), with foreign securities accounting for about three-fourths of the total. Following three months of sluggish buying, net purchases of foreign bonds reached a record $12.3 billion in June. The June surge, encouraged by the relative stability of exchange rates and the rise in U.S. long-term interest rates, brought total net foreign bond purchases to $48.5 billion for the first six months of 1987 (see Table 2).

Table 1: Japan's Balance of Payments

(in millions of dollars)

	Trade Balance	Exports (f.o.b.)	Imports (f.o.b.)	Services (net)	Current Account Balance	Long-Term Capital (net)
1982	$18,079	$137,663	$119,584	$-9,848	$6,850	$-14,969
1983	31,454	145,468	114,014	-9,106	20,799	-17,700
1984	44,257	168,290	124,033	-7,747	35,003	-49,651
1985	55,986	174,015	118,029	-5,165	49,169	-64,542
1986	92,827	205,591	112,764	-4,932	85,845	-131,461
1986:I	14,552	44,813	30,261	-1,145	12,668	-18,990
1986:II	23,922	52,270	28,348	-374	23,099	-28,882
1986:III	26,793	53,859	27,066	-1,922	24,413	-38,410
1986:IV	27,560	54,649	27,089	-1,491	25,665	-45,179
1987:I(p)	23,159	50,379	27,220	-1,510	20,585	-32,455
1987:II(p)	24,823	55,822	30,999	-1,567	22,570	-44,233

Source: Bank of Japan

Table 2: Japanese Net Purchases of Foreign Securities

(in millions of dollars)

	Bonds			Stocks		
	Purchases	Sales	Net	Purchases	Sales	Net
1982	$16,980	$10,904	$6,076	$1,126	$975	$151
1983	22,905	10,400	12,505	2,106	1,445	661
1984	56,348	29,575	26,773	1,570	1,519	51
1985	291,338	237,859	53,479	5,484	4,489	995
1986	1,346,989	1,253,965	93,024	20,917	13,869	7,048
1986:I	251,591	234,330	17,261	2,793	1,961	832
1986:II	368,271	343,467	24,804	3,717	2,260	1,457
1986:III	357,331	330,980	26,351	6,481	4,473	2,008
1986:IV	369,796	345,188	24,608	7,926	5,175	2,751
1987:I(p)	377,850	354,648	23,202	13,925	9,386	4,539
1987:II(p)	n.a.	n.a.	25,267	n.a.	n.a.	5,480

Source: Bank of Japan

Although bonds remained their largest overseas holding, Japanese investors moved strongly into foreign stocks in 1987's first half. Net purchases of foreign equities (mainly American), which rose from $1 billion in 1985 to $7 billion last year, exceeded $10 billion in the January-June period. With prices on the Tokyo Stock Exchange at unprecedented levels, the relatively low price-earnings ratios in the U.S. market are attracting Japanese investors. In addition, many analysts believe the profit outlook for big U.S. companies is bright due to tax reform and the benefits of a weaker dollar.

The latest balance of payments figures suggest that the sharp appreciation of the yen is having its long-awaited impact on Japan's current account (merchandise trade, services and transfers). After 18 consecutive quarterly increases, the surplus in the April-June 1987 quarter fell 2.3 percent from the year-earlier level to $22.6 billion. The decline was primarily a result of a larger services deficit, resulting from an overseas travel boom fanned by the strong yen. The increased red ink in the travel and transportation categories more than offset a rise in net investment income.

The current account surplus for all of 1987, however, is likely to break last year's $85.8 billion record, since at $43.2 billion in the January-June period it was 20.7 percent above the year-earlier figure. The trade surplus also climbed sharply to $48 billion compared to $38.5 billion. Although the changes in exports and imports that began in 1986 will eventually reduce the surplus, a recent report by Japan's central bank conceded that the surplus in nominal terms is likely to remain sizable in the near future.

The Bank of Japan report concludes that "to reduce the surplus to an internationally acceptable level in the long run, therefore, an overhaul of Japan's economic structure is required in such a way as to lessen its chronic dependence on external demand." The reallocation of resources away from the tradable goods sector indicates that this restructuring is already under way. Investment in nonmanufacturing businesses, for example, has increased rapidly, attracted by their greater profitability. According to the Industrial Bank of Japan, it rose 14.8 percent in FY 1986, compared to an 8.6 percent decline in the manufacturing sector. In addition, nonmanufacturing employment expanded by 690,000 last year in contrast to the loss of 90,000 manufacturing jobs (see JEI Report No. 27B, July 17, 1987). A second significant trend is the shift to overseas production. Direct foreign investment climbed 82.7 percent to $22.3 billion in FY 1986, propelled in part by a 61.8 percent jump to $3.8 billion in the outflow of money for manufacturing and assembly operations (see JEI Report No. 25B, July 2, 1987).

Randall S. Jones

Tokyo Tackles Problem Of Rising Land Prices

Soaring land prices have caused an uproar in Japan and pose a difficult political problem for the government. Driven by speculation, prices in residential and business districts in central Tokyo rose 76 percent last year, and the price spiral is now spreading to the suburbs and other major cities. The surge has created instant millionaires while making it more difficult for families to purchase homes. The average price of a home in Tokyo is more than six

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JEI

REPORT

NO. 31A August 14, 1987

THE CHANGING PATTERN OF JAPANESE TRADE: NORTHEAST ASIA

Summary

Several of the world's most economically dynamic countries are located in Northeast Asia: South Korea, Taiwan, the People's Republic of China, the Soviet Union and, of course, Japan. For nearly three decades, one or more countries in the region have experienced explosive growth -- Japan during the 1950-70 period and since that time South Korea, Taiwan and China. In the 1980s, however, the region entered a new era of economic and trade patterns. Although Japan, South Korea, China and Taiwan continue to focus on exporting to the United States as in previous years, trade within the region is taking on greater importance and complexity. This is particularly true for Japan as a result of forces unleashed by the strong yen, market deregulation and economic restructuring.

Background

Economic reconstruction was the central postwar task for all the countries of the region. Unfortunately for Taiwan and China, the communist revolution and its aftermath diverted them from this issue well into the 1950s, while civil war delayed Korea's rebuilding efforts for several years. Japan immediately set out on the road to recovery under the aegis of the American occupation and even benefited from the Korean conflict by serving as a convenient source of supply for the United Nations forces. By the start of the 1960s, Japan was well on its way to achieving the ambitious "income doubling" goal its leaders had set. In contrast, Japan's neighbors were only beginning to address seriously the issues of economic development. The Soviet Union was clearly an exception to this point, but its attention was directed mainly toward Europe. The Asian republics were far down on Moscow's list of economic priorities.

The countries exhibit certain common traits that have bolstered their economic performance: a strong work ethic, a sense of social order, and an emphasis on the importance of education. A history of free-market mechanisms is also common to the solely Asian nations, although this was a major obstacle to "proper" development from Beijing's point of view. In terms of natural resources, there is a clear division between China and the Soviet Union and the other nations. Trade, therefore, carries a different weight in Seoul, Taipei and Tokyo than it does in Beijing or Moscow. For the former group importing raw materials and exporting finished products is the only realistic approach. This is not true for the latter.

In terms of population and land mass, there is also a clear hierarchy with South Korea and Taiwan at the low end, Japan in the middle, and China and the Soviet Union at the top. The economic impacts of size are varied and subtle. While a small population and area are easier to administer, they also preclude the benefits of economies of scale without resorting to trade. On the other hand, too large a population and land mass, while offering the possiblity of autarkic growth, poses problems of command and control (especially to centralized, non-market economies). Japan was fortunate that it had a large enough market for domestic firms to grow and compete behind trade barriers, but not so large as to present serious administrative problems.

In addition to these physical factors, geopolitical considerations also bear significantly on economic priorities. Every nation except Japan has felt it necessary to channel a significant part of its resources into military channels. Restrained by its constitution and protected by the American nuclear umbrella, Japan has made only minimal forays into this economically sterile field.

A panoply of trade and financial controls was designed by these nations in response to the problems of postwar development. Behind a wall of barriers, import-substituting industrialization was pursued with varying degrees of success. By combining foreign technology with low cost labor, Japan, Taiwan, South Korea and China scored impressive gains in productivity. Despite these barriers, Japanese trade within the region prospered. Thanks to its headstart on reconstruction, Japan supplied most of the manufactured inputs required by Taiwan and South Korea to rebuild their economies in exchange for raw materials or light manufactures. There has been a natural progression up the value-added scale in the composition of trade -- a progression accelerated by recent economic developments.

Overview of Trade

Total Japanese exports in 1986 were 24.7 times their 1965 level, while imports were 15.5 times higher. Exports to Korea ballooned to 58.1 times 1965's figure and imports swelled 128.1 times. For Taiwan, exports expanded 36 times and imports 29.8. Trade with the Soviet Union did not keep pace with

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overall trade growth: 1986 exports were only 18.7 times higher than in 1965 and imports just 8.2 times more. Trade with China was also mixed; exports in 1986 were 40.2 times the 1965 level, but imports were only 10.7 times as great (see Figure 1 and Table).

As for the importance of bilateral trade in terms of overall trade, there is a wide divergence between Japan and its neighbors. Tokyo's 1986 trade with Korea (5 percent for exports and 4.2 percent for imports), Taiwan (exports 3.8 percent and imports 3.7 percent), China (4.7 percent for exports and 4.5 percent for imports) and the Soviet Union (1.5 percent and 1.6 percent, respectively) ranked well below its value with the United States or Europe. Trade with Northeast Asian nations, however, was on a par with Southeast or South Asian trade.

Despite these undistinguished numbers, Northeast Asian trade receives a disproportionate amount of attention from Tokyo for a variety of reasons. Trade with Korea is influenced by security considerations, and with the peninsula a flashpoint, fostering South Korea's stability and strength is an important aim of foreign policy. Relations with Moscow are also heavily influenced by security concerns. China represents a vast potential market and competitor, making sound political and trade relations essential for future growth. Since breaking relations with Taipei in 1972, Tokyo has dealt with Taiwanese issues in a circumspect manner. Increasing Japanese investment there may change this, however.

From the viewpoint of the country's trading partners (except for the Soviet Union), trade with Japan is much more important. Japan bought 14.9 percent of South Korea's 1986 exports and sold it 31.4 percent of its imports. The comparable figures for Taiwan are 11 percent and 25 percent, respectively; for China, 18 percent and 22.7 percent. Although these shares represent a sharp drop from 1965 levels in the cases of South Korea (23.6 percent of exports and 55 percent of imports) and Taiwan (35 percent and 39.2 percent, respectively), the disparity in dependence remains significant. Only Soviet trade with Japan has remained steady at about 5 percent for exports and 7 percent for imports.

Composition of Trade

More interesting than just the growth of Japan's trade in Northeast Asia is its changing composition. The gradual shift in the export/import mixture with each country reveals the impact of economic evolution.

South Korea - In 1975 Japanese exports to South Korea were dominated by machinery and transportation equipment (39.9 percent), followed by chemicals (19.5 percent), metals and metal manufactures (15.5 percent), miscellaneous manufactures (12.9 percent) and textiles (10.8 percent). In 1986 machinery and transportation equipment (which includes computers, machine tools, electronics equipment and automotive components) had increased to 57.8 percent, while textiles fell by half to 5 percent, chemicals declined to 13.2 percent and metals and metal manufactures dropped to 13.5 percent (see Figure 2). A closer inspection of the machinery group reveals interesting developments. Office equipment (0.5 percent in 1975; 4.1 percent in 1986), metalworking machinery (rising from 2.4 percent to 3.9 percent), electric machinery (from 1.5 percent

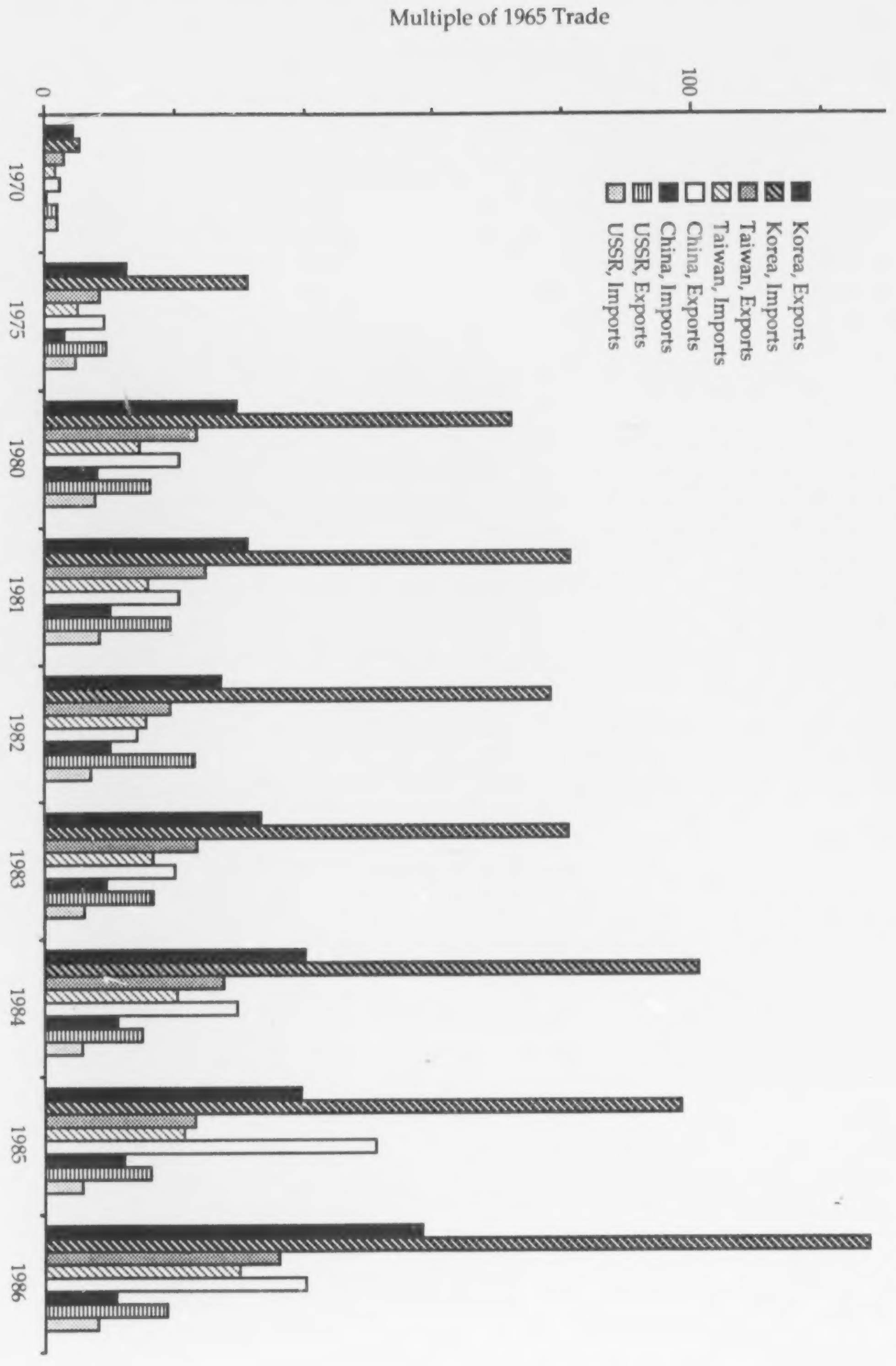


Figure 1: Japan's Trade with Northeast Asia

(1965 = 1.00)

Japan's Trade with Northeast Asia, 1965-1986

(in thousands of dollars)

	Global Total			South Korea			Taiwan		
Year	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
1965	$8,451,742	$8,169,019	$282,723	$180,304	$41,315	$138,989	$217,916	$157,317	$60,599
1966	9,776,391	9,522,702	253,689	335,170	71,688	263,482	255,378	147,396	107,982
1967	10,441,572	11,663,087	-1,221,515	406,959	92,382	314,577	328,154	167,088	161,066
1968	12,971,662	12,987,243	-15,581	612,653	101,630	511,023	471,626	150,721	320,905
1969	15,990,014	15,023,536	966,478	767,191	133,927	633,264	606,358	180,516	425,842
1970	19,317,687	18,881,168	436,519	818,175	228,970	589,205	700,418	250,765	449,653
1971	24,018,881	19,711,749	4,307,132	855,687	274,421	581,266	923,332	286,017	637,315
1972	28,591,144	23,470,710	5,120,434	979,793	425,992	553,801	1,090,616	421,864	668,752
1973	36,929,971	38,313,604	-1,383,633	1,789,115	1,207,309	581,806	1,641,759	890,696	751,063
1974	55,535,755	62,110,456	-6,574,701	2,656,056	1,568,041	1,088,015	2,009,007	955,188	1,053,819
1975	55,752,805	57,863,088	-2,110,283	2,247,723	1,307,999	939,724	1,821,669	811,587	1,010,082
1976	67,225,483	64,798,968	2,426,515	2,824,464	1,916,773	907,691	2,279,765	1,189,830	1,089,935
1977	80,494,793	70,808,654	9,686,139	4,079,602	2,113,399	1,966,203	2,552,676	1,288,666	1,264,010
1978	97,543,143	79,343,043	18,200,100	6,003,046	2,591,029	3,412,017	3,584,744	1,750,153	1,834,591
1979	103,031,640	110,672,248	-7,640,608	6,246,890	3,359,416	2,887,474	4,366,850	2,475,920	1,890,930
1980	129,807,025	140,527,652	-10,720,627	5,368,310	2,996,272	2,372,038	5,145,799	2,293,366	2,852,433
1981	152,030,247	143,289,675	8,740,572	5,657,863	3,388,915	2,268,948	5,404,570	2,522,501	2,882,069
1982	138,831,166	131,931,214	6,899,952	4,881,133	3,253,813	1,627,320	4,255,369	2,443,115	1,812,254
1983	146,927,471	126,393,051	20,534,420	6,003,770	3,364,954	2,638,816	5,085,999	2,622,317	2,463,682
1984	170,113,888	136,503,049	33,610,839	7,226,822	4,212,740	3,014,082	5,986,193	3,203,935	2,782,258
1985	175,637,772	129,538,747	46,099,025	7,097,214	4,091,949	3,005,265	5,025,462	3,385,531	1,639,931
1986	209,151,151	126,407,786	82,743,365	10,474,500	5,291,970	5,182,530	7,851,703	4,690,521	3,161,182

	China			U.S.S.R.		
Year	Exports	Imports	Balance	Exports	Imports	Balance
1965	$245,036	$527,076	$-282,040	$168,358	$240,198	$-71,840
1966	315,150	306,237	8,913	214,022	300,361	-86,339
1967	288,294	269,439	18,855	157,688	453,688	-296,000
1968	325,439	224,185	101,254	179,018	463,512	-284,494
1969	390,803	234,540	156,263	268,247	461,563	-193,316
1970	568,878	253,818	315,060	340,932	481,038	-140,106
1971	578,188	323,172	255,016	377,267	495,880	-118,613
1972	608,921	491,116	117,805	504,179	593,906	-89,727
1973	1,039,494	974,010	65,484	484,210	1,077,701	-593,491
1974	1,984,475	1,304,768	679,707	1,095,642	1,418,143	-322,501
1975	2,258,577	1,531,076	727,501	1,626,200	1,169,618	456,582
1976	1,662,568	1,370,915	291,653	2,251,894	1,167,441	1,084,453
1977	1,938,643	1,547,344	391,299	1,933,877	1,421,875	512,002
1978	3,048,748	2,030,292	1,018,456	2,502,195	1,441,723	1,060,472
1979	3,698,670	2,954,781	743,889	1,461,464	1,910,681	-449,217
1980	5,078,335	4,323,374	754,961	2,778,233	1,859,866	918,367
1981	5,095,452	5,291,809	-196,357	3,259,415	2,020,706	1,238,709
1982	3,510,936	5,352,417	-1,841,481	3,898,841	1,682,017	2,216,824
1983	4,912,334	5,087,357	-175,023	2,821,249	1,456,001	1,365,248
1984	7,216,712	5,957,607	1,259,105	2,518,314	1,393,987	1,124,327
1985	12,477,446	6,482,686	5,994,760	2,750,583	1,429,255	1,321,328
1986	9,856,178	5,652,351	4,203,827	3,149,547	1,972,033	1,177,514

Figure 2: Japan's Exports to South Korea

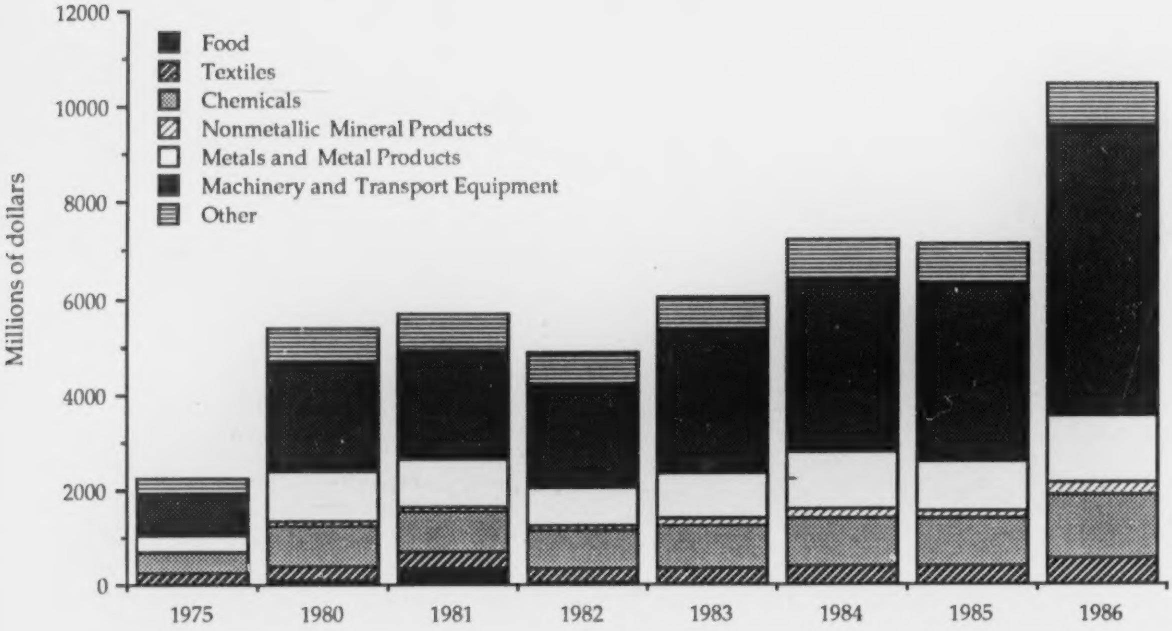
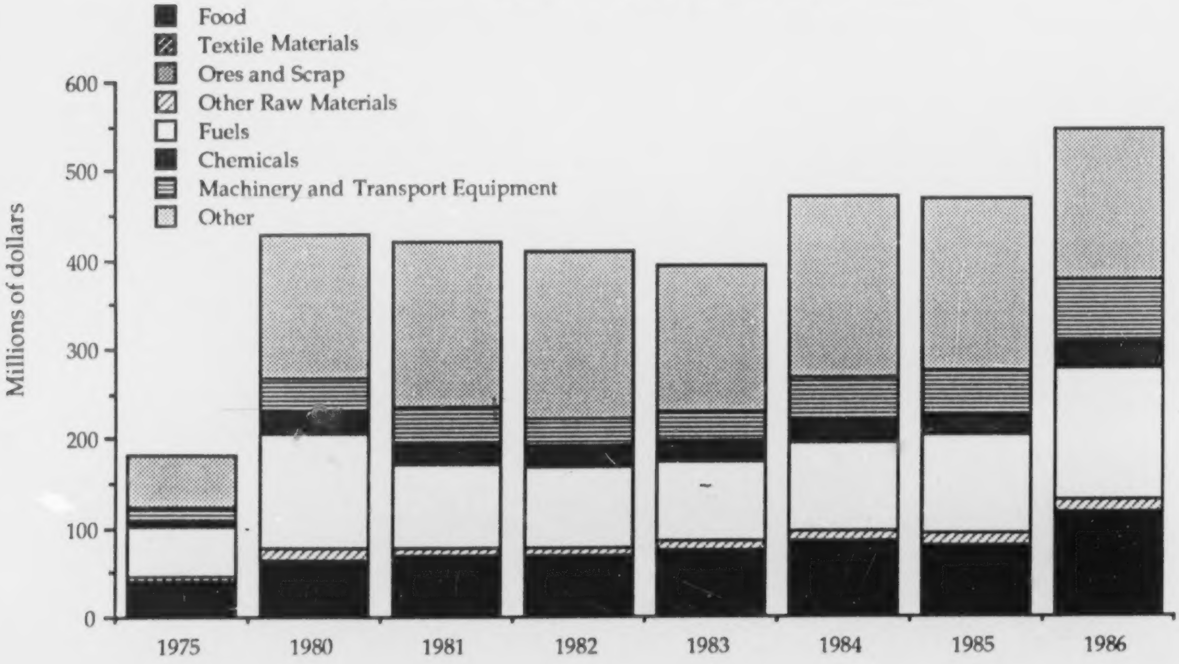


Figure 3: Japan's Imports from South Korea



to 2.9 percent), precision equipment (1 percent to 2 percent) and television tubes (2.4 percent to 7.3 percent) increased their relative shares. Products registering declines included: cars and trucks (0.6 percent to 0.1 percent), ships (3.6 percent to 0.3 percent), textile machinery (2.4 percent to 1.6 percent) and sewing machines (0.5 percent to 0.2 percent). In sum, Japan has moved toward providing higher value-added products as the South Korean economy has developed.

On the import side, the picture is equally interesting (see Figure 3). Japanese purchases of food have remained relatively stable (ranging from 20 percent to 25 percent of imports), as have machinery and transportation equipment imports (in the 10-12 percent range). Chemicals (2.4 percent to 6.1 percent) and petroleum products (3.2 to 5.6 percent) have gained as groups. Individually, imports of steel (1 percent to 10 percent), office equipment (0.2 percent to 0.7 percent) and precision equipment (1.6 percent to 2.8 percent) have shown significant gains. Just as Japanese exports to Korea reflect higher value added, so do Korean exports to Japan reveal an advancing degree of industrial capability.

Taiwan - Much the same can be said for Japan-Taiwan trade -- Japan has gradually abandoned low-end products for higher value added as the Taiwanese economy has expanded. Deliveries of textiles, chemicals (particularly fertilizers), plastics, metals and metal manufactures, radios, watches and transportation equipment plummeted between 1975 and 1986. Shipments of office equipment, electric machinery and television tubes, on the other hand, have grown.

Chemicals, metals and metal manufactures and office equipment have garnered a larger share of Taiwan's shipments to Japan, while food, scrap metal and other raw materials have all lost ground. In general the thrust of Taiwan's exports appears more narrow than South Korea's efforts. The former appears to be focusing on industrial supplies, while South Korea is also moving into consumer markets (see Figures 4 and 5).

China - Trade with China has been erratic under the influence of changing political winds in Beijing. The current reformist regime of Deng Xiaoping has enabled trade not just to bloom but explode (see Figres 6 and 7). China's decision to liberalize agriculture and focus on light industry and consumer demand dovetail with Japan's export and import needs. Shares of finished consumer goods and industrial machinery in Japan's exports to China showed phenomenal growth between 1975 and 1986: cars and trucks were up from 3.6 percent to 6.2 percent (although they captured 12 percent in 1985); radios rose to 0.4 percent from 0.02 percent; televisions from 0.1 percent to 1.5 percent (8 percent in 1985); textile machinery from 0.7 percent to 2.7 percent; metalworking equipment from 1.9 percent to 3 percent; and office machinery from 0.17 percent to 1.2 percent. Not surprisingly, Japan's exports of light manufactures have dropped, including all categories of textiles, metals and metal manufactures.

Japan's imports from China continue to be dominated by mineral fuels, although their share dropped from 49 percent in 1975 to 29.4 percent in 1986. Imports of intermediate goods (petroleum products, industrial chemicals, steel, nonferrous metals and textiles) and light manufactures like toys have surged. The same process reflecting industrial development is clear, but at an earlier stage than in the cases of trade with South Korea or Taiwan.

Figure 4: **Japan's Exports to Taiwan**

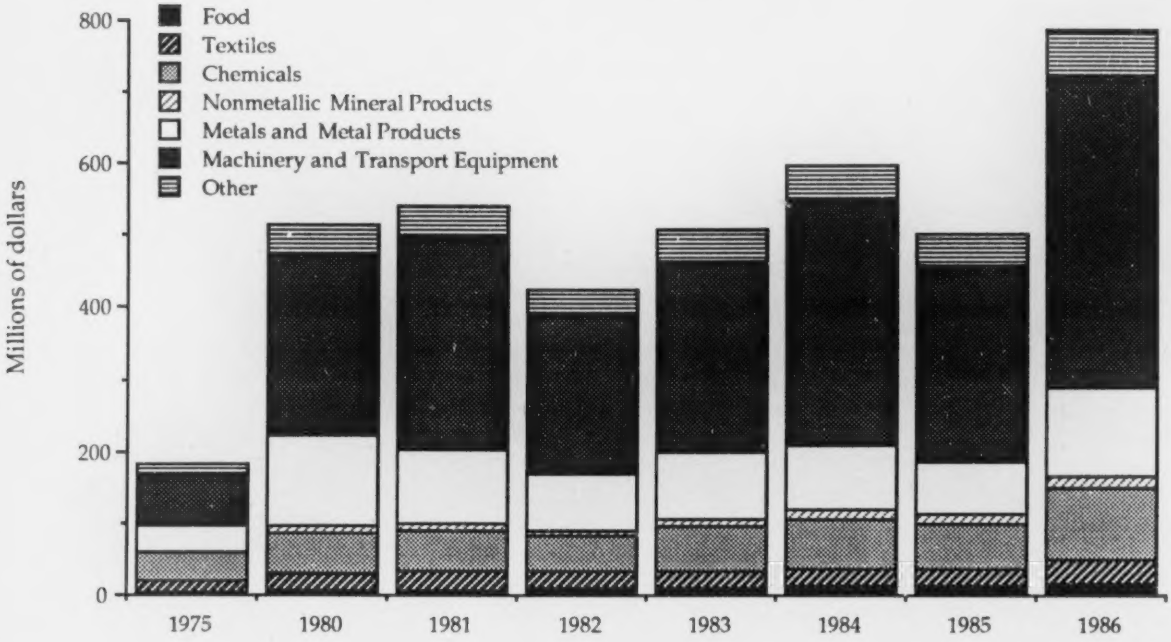


Figure 5: **Japan's Imports from Taiwan**

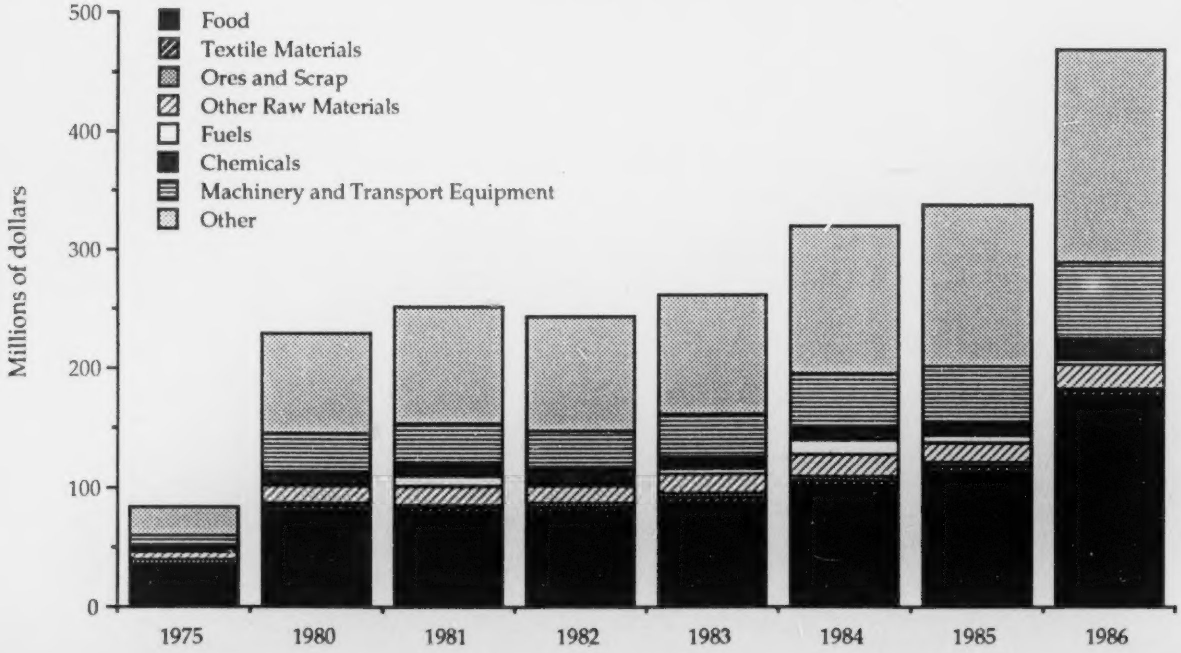


Figure 6: **Japan's Exports to China**

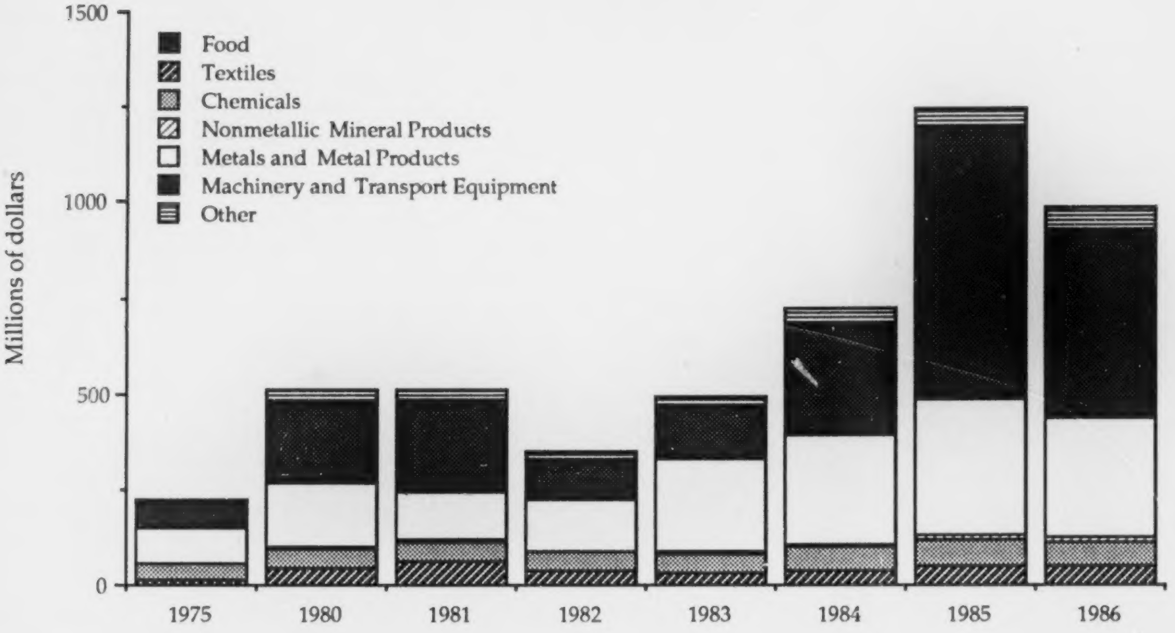
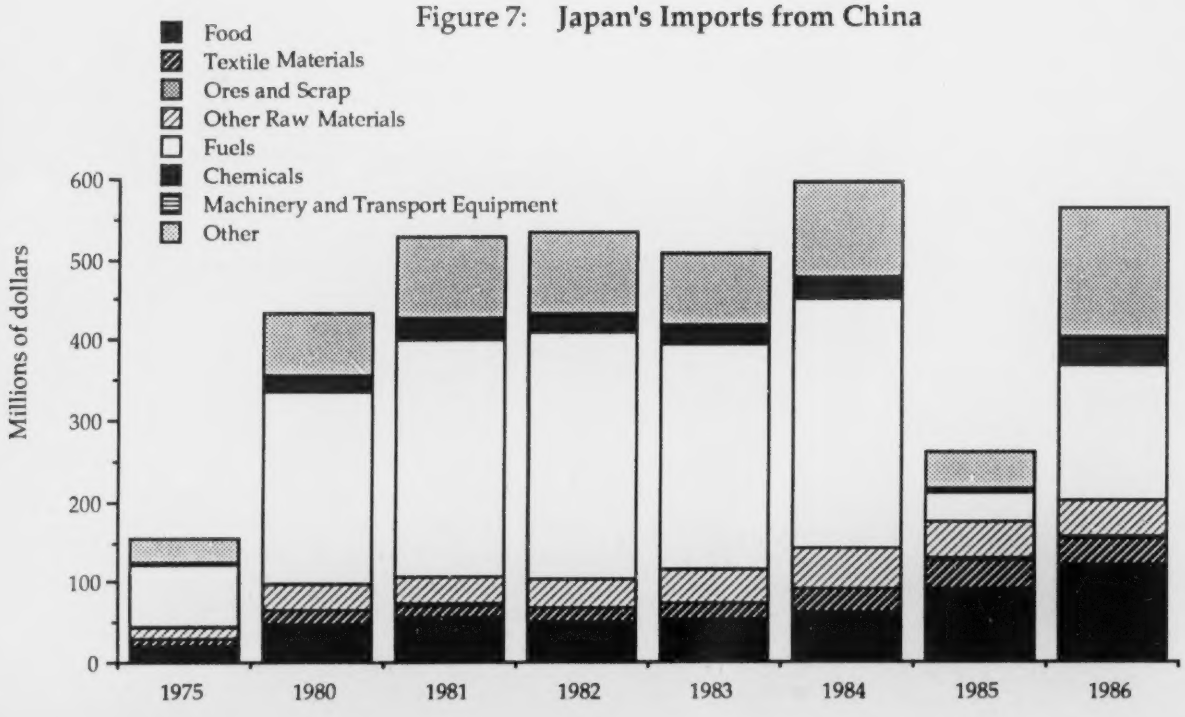


Figure 7: **Japan's Imports from China**



Soviet Union - In contrast Japan's export trade with the Soviet Union appears relatively static, although imports show a sharp shift (Figures 8 and 9). Political considerations have severely limited trade opportunities, holding down overall growth. Nevertheless, there is a slight shift in Japanese exports away from commodity items toward specialized goods: shipments of textiles, plastics and metal manufactures have drifted lower while pharmaceuticals and electric and precision machinery have gained.

This trend away from basic products also distinguishes Soviet exports to Japan -- not unexpectedly since the Soviet Union is an advanced industrialized nation. Japanese purchases of textile materials, scrap metal and other industrial inputs have declined sharply since 1975, as deliveries of final goods grabbed the lion's share of trade, rising from 15.9 percent in 1975 to 40.4 percent in 1986.

Rapid economic growth has had a steady impact on trade patterns, with the export/import mix showing an increase in value added as industrialization has progressed. Although this trend would continue under any circumstances, the yen's sharp appreciation combined with Tokyo's economic restructuring efforts will accelerate it.

The Impact of the Strong Yen

The yen's 60 percent-plus appreciation against the dollar since late September 1985 has forced Japanese businessmen to adopt strategies that have become more attractive as a result of the deregulation of financial and goods markets.

- Purchases from abroad - The strong yen has made foreign manufactures cheaper, particularly those from countries that peg their currency to the dollar (China, Taiwan and South Korea). Even though Taipei and Seoul have allowed their currencies to appreciate against the dollar (4.8 percent for the won and 23 percent for the new Taiwan dollar), product prices remain well below those in Japan. As the yen has climbed steadily, Japanese efforts to increase offshore procurement have become almost frantic. As a result imports from Korea for the first five months of 1987 jumped 54.2 percent over the same period in 1986, while the figure for Taiwan is an equally impressive 54.8 percent. Imports from China (up 10.8 percent) and the Soviet Union (down 4.2 percent) were not affected.

The effect has also reached retailers, with large department stores devoting shelf space to Korean consumer electronics and other durables as well as nondurable goods. The attraction is price -- up to 25 percent below domestic goods. So far retailers have reported customer complaint rates for Korean products are no higher than for Japanese makes. Retailers are urging Korean makers to establish service networks in Japan in order to bolster the appeal of their products.

The strong yen has had a balancing impact, however. American buyers also face the same relative price increase for Japanese goods and have responded by purchasing more from South Korea and Taiwan. The catch is that key components of Korean-made consumer electronics and automotive products are purchased from Japan. The more the Koreans sell, the more they have to buy from

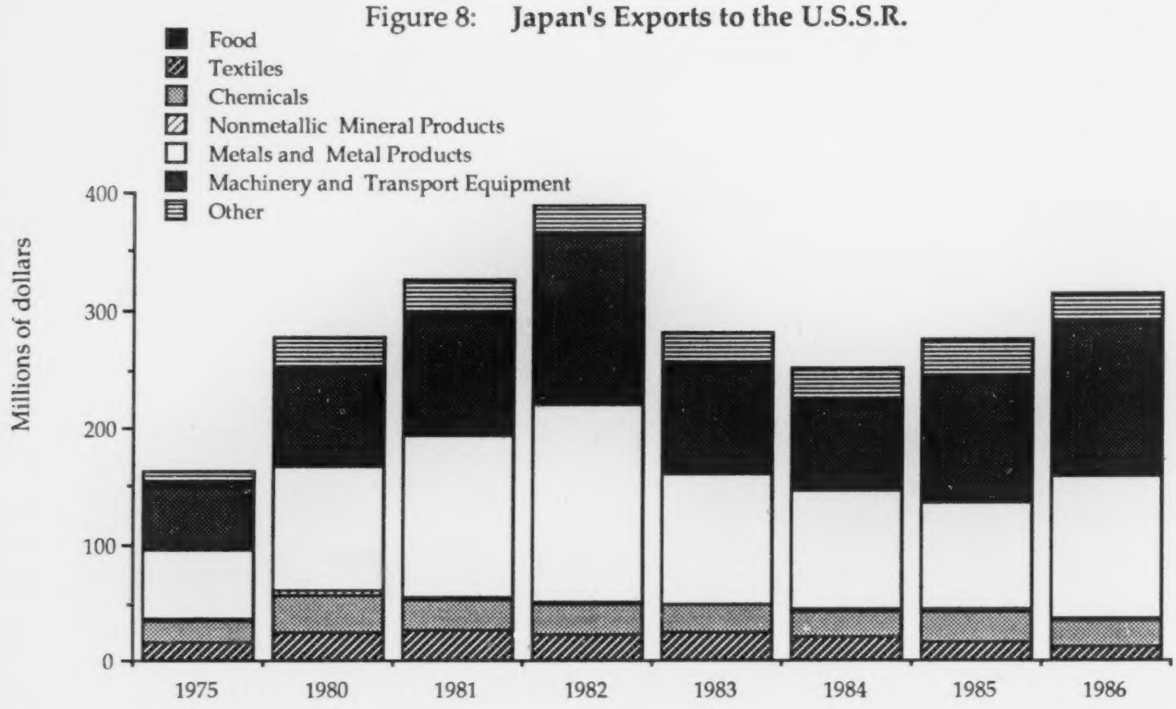


Figure 8: Japan's Exports to the U.S.S.R.
Food
Textiles
Chemicals
Nonmetallic Mineral Products
Metals and Metal Products
Machinery and Transport Equipment
Other
Millions of dollars
400
300
200
100
0
1975
1980
1981
1982
1983
1984
1985
1986

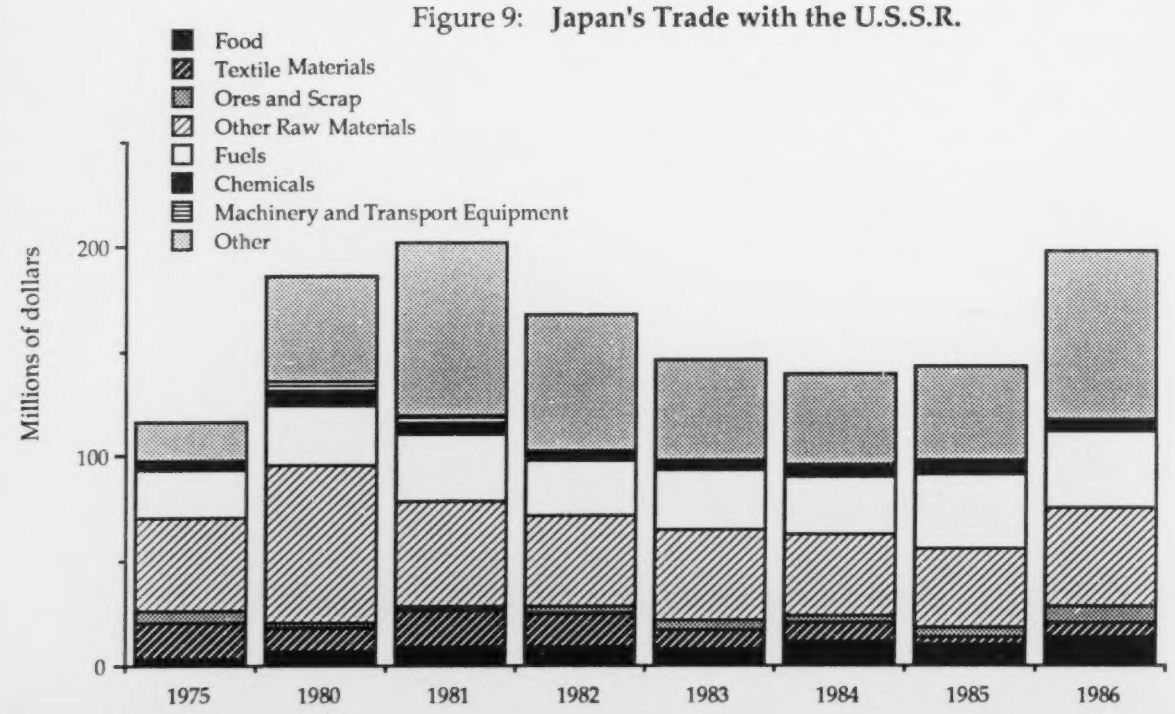


Figure 9: Japan's Trade with the U.S.S.R.
Food
Textile Materials
Ores and Scrap
Other Raw Materials
Fuels
Chemicals
Machinery and Transport Equipment
Other
Millions of dollars
200
100
0
1975
1980
1981
1982
1983
1984
1985
1986

Japan. According to a Japanese bank, Korea's dependence on Japanese components ranges as high as 99.2 percent for light bulbs, 96.5 percent for sound recording units, 79.9 percent for automotive components, 53.9 percent for integrated circuits and 34.9 percent for electronic measuring instruments (see JEI Report No. 24B, June 26, 1987).

Total Japanese exports to Korea were up 33.5 percent for the first five months of this year, with shipments of television tubes and other electronic components up 74 percent. Exports to Taiwan were equally active, rising 99.5 percent on the strength of a 71 percent jump in metals and metal manufactures and a 68 percent increase in machinery. These figures certainly reflect the appreciation of the yen, but the fact remains that Korean and Taiwanese exports exert a strong pull on Japanese exports. Furthermore, it will take some time for the Koreans and Taiwanese to diversify their sources, if it is possible at all (few alternatives exist for videocassette recorder heads, for example).

- Foreign direct investment - After criticizing American firms for moving factories abroad when the dollar rose to unprecedented heights in the early 1980s, Japan is in exactly the same situation and is acting in exactly the same way. Major and mid-level firms are moving production of simple assemblies, parts and products to Taiwan, South Korea, China, Mexico and other low-wage nations with obvious implications for a shift in trade patterns over the long term.

According to the latest figures on foreign direct investment, Japanese businessmen doubled the amount of money going to Taiwan and tripled the flow to Korea in fiscal 1986 (see JEI Report No. 25B, July 2, 1987). Press reports say a wide range of firms is investing in production facilities in the region: automotive parts manufacturers in Taiwan; electronics producers in Korea and Taiwan; and a host of ventures in China. These facilities will rearrange the composition of trade as well as its pattern in the region within a few years.

Developments in Other Countries

Tokyo is not the only government pursuing liberalization and deregulation. Under pressure from the United States, Taipei and Seoul have moved over the past year to open their markets and raise the value of their currencies. The leadership in Beijing is currently preparing for the tenth People's Congress in October that will set the broad outlines of economic policy for the next few years. Soviet president Mikhail Gorbachev's glasnost program has invigorated Soviet foreign policy but whether it will have any effect on economic policy remains in question.

Korea - Seoul has announced two import liberalization packages since the start of 1987. The April announcement, effective July 1, opened the door a little wider to imports of computers with processors under 32 bits, computer peripherals, automotive parts and candy. To protect the domestic industry, Seoul had barred imports of 8-bit computers and allowed imports of 16- and 32-bit units on a selective basis. Not only did the government lift the ban on the smaller capacity units, but it also agreed to drop local content requirements for computers purchased by government agencies or organizations. (The rule for small computers went into effect July 1, and is to be effective as of January 1, 1988 for large systems.) The categories of auto parts requiring a "good" rating from the government was reduced from 12 to two; and the maximum time inspectors will take to process imported candies was cut in half to 12 days.

The second package, also directed at American opinion, was announced in early June. Tariffs on 50 miscellaneous items were reduced by 5 to 30 percent; levies on tobacco products were cut from 100 to 70 percent; and rates on photographic products were lowered by 5 to 20 percent. Imports of subcompact cars (with less than 1,000 c.c. engines) and large cars (with engines above 2,000 c.c.) were allowed for the first time since the early 1960s. The Ministry of Trade and Industry also has put textiles, electronics, engine parts, steel products and some canned food products on its liberalization list.

Seoul is also beginning to dismantle financial barriers. Greater access for foreign insurers was granted last year (although many problems remain), and there is some movement in other service areas. While the won has been allowed to appreciate against the dollar over recent months, Seoul has made it clear that this is as far as it can go for now.

Finally, political changes will play a major role. Recent moves toward greater democratization could lead to a more stable government, not only enhancing the likelihood of further trade liberalization, but also improving the investment atmosphere.

Taiwan - Taipei capped the gradual appreciation of the new Taiwan dollar by ending many controls on foreign exchange July 15. With an estimated $62 billion in foreign exchange reserves -- the result of impressive trade surpluses with the United States and others -- the reforms were necessary to stabilize the new exchange rate and placate domestic and foreign critics. Under the new rules foreign currency need not be converted immediately into local currency, and up to $5 million may be invested abroad without government approval.

Not only will the changes help insulate the domestic economy from the inflationary pressures of such huge reserves, but they will surely trigger a huge outflow of capital, some of which will almost surely flow to Japan (despite the fact that Japanese interest rates are below Taiwan's and that price/earnings ratios on the Tokyo exchange are lower than on the Taipei floor). Private bankers and businessmen have termed this the end of "economic martial law," and will soon begin to test the limits of their new freedom.

The end of 38 years of martial law earlier this year opened the door to significant political activity. The current leadership (mainly immigrants from the mainland) has been wrestling with the problem of succession for some years. The move to end martial law and allow opposition parties to organize more freely will help to defuse political pressures. The consequences of greater stability apply equally to Taiwan as to Korea.

China - The single most important question facing China is who will control economic policy, the reformers or the conservatives? Since Deng Xiaoping rose to power in the late 1970s, the movement toward a more flexible economy and the acceptance of free-market mechanisms has advanced and retreated as the clash between ideology and economics seesaws back and forth. Mr. Deng and his allies hope to cement some basic liberal principles at this year's tenth party congress, but they have already been forced to scale back their goals. The reform group suffered a stinging defeat when Hu Yaobang, one of their members, was forced to step down as party chairman earlier this year. Conservatives seized control of the public debate for several months, and only recently have the reformers been able to reassert their will on economic policy.

The clash has wide-ranging implications for trade and investment. While foreigners are eager to deal with China, they face a multitude of uncertainties that reflect the political winds: foreign exchange restrictions, domestic price controls and policies, establishment of a favorable legal framework and independent judiciary, and import/export controls. Until China demonstrates greater political stability, caution will continue to characterize foreign strategies.

U.S.S.R. - What does glasnost mean? This is the question being asked in Tokyo and elsewhere. Mr. Gorbachev may have signaled his intentions by continuing preparations for his visit to Japan despite the uproar in the United States and Japan over the Toshiba Machine Co., Ltd. affair. While significant political barriers are likely to remain (the Northern territories issue), increasing trade may be one method of building stronger bridges between the Soviet Union and other countries of the region.

Outlook

It is clear that economic forces are reshaping trade patterns between Japan and its neighbors; economic development, shifting exchange rates and deregulation are closing old paths and opening new ones. The final component is each government's vision of where the nation should be at the beginning of the next century. Given the high degree of social order in Japan, South Korea, Taiwan and China, these long-range plans have a definite, if subtle, influence.

Japan sees itself transformed into an information-based society in the 21st century. The gathering, transmission, manipulation, storage and dissemination of information will be the cornerstone of high-technology society. Services, therefore, will play the leading role in economic growth, although manufacturing based on advanced technology will surely make a major contribution. The implications are already showing up in the trade statistics: Japan will import more and more finished products while exporting capital and services. This fits with conceptions of an "international division of labor," in which Japan, as an advanced nation, must give way to other nations as they develop comparative advantage in low-end products.

This suits South Korea just fine, since its intention seems to be to build an economy capable of competing across the entire spectrum of goods in order to pay off its large foreign debt and support its heavy defense expenditures. Having mastered the basic steel, textile and shipbuilding industries, Korean conglomerates have moved rapidly into construction, cars, and consumer and industrial electronics. By joining up with foreign firms to obtain technology, the Koreans have put both the United States and Japan on notice that they intend to be major competitors. Obviously the drive to build such an economic machine has and will require a great deal of foreign trade in both goods and services.

Taiwan's ambitions are less grand, but no less significant in terms of trade. Parts and subassemblies will be the keystone of industry, supported by high-technology light industry such as computers and peripherals. Major campaigns are being waged to attract automotive, computer and other machinery companies. The combination of low rents, a highly skilled and disciplined labor force, and abundant capital have already attracted many American firms, while Japan is rapidly building its presence. Taiwan's trade will surely grow in value added, but perhaps in only a few product groups.

China's desire is simply to become a developed country. The size and breadth of the tasks it faces are daunting. If political factors remain favorable, the potential for growth and trade are impressive. Not only does increased trade depend on China's leaders but also on the willingness of foreigners to accept the risk and uncertainty. A great many issues must be resolved before the outlook on China's trade clears.

The Soviet Union also faces political hurdles, for while it has attained superpower status in military terms, it remains economically feckless. Soviet analysts give Mr. Gorbachev an even chance at best of seeing his economic reforms put into full practice. Soviet Asia remains a stepchild in terms of priorities. Even if Moscow decides to mount a major development effort, trade may not increase significantly. Without true economic reform and political stability, trade will remain limited. Of course, should Mr. Gorbachev succeed, the picture could change completely.

Whatever China and the Soviet Union decide, Japan, Taiwan and South Korea are well on the way toward building a web of trade and investment that will link them more closely than ever. The three will have problems managing the new relationship (witness the difficulties between the United States and Japan), but manage them they will -- there is no other choice. In any case, it is clear that the region will be a center of economic activity for some decades to come. Shifting trade patterns reveal the depth of economic adjustment in progress.

For further information, contact Jon Choy

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

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REPORT

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IN THIS ISSUE:

Signs Of Economic Recovery Spreading 1

Defense Spending Remains On Track 3

Banks Report Mixed Profits 4

Bearing Makers File National Security
Trade Complaint 6

Notes: Second KDD;
Supercomputers 8

Signs Of Economic Recovery Spreading

Recent government reports from Tokyo have concluded that the economy has touched bottom and is on the road to recovery. The Economic Planning Agency said that the recovery began in the first quarter of 1987, as the benefits of the strong yen began to outweigh the impact of falling export volume. The Bank of Japan expects the government's Y6 trillion ($40 billion at Y150=$1.00) stimulus package to accelerate growth in domestic demand to a real annual rate of more than 5 percent during the remainder of fiscal 1987.

The central bank cited healthy growth in housing and capital investment as positive signs. Spurred by record low interest rates, housing starts rose to 1.37 million in 1986, the highest in seven years. The additional funds allocated for the Housing Loan Corp. in the stimulus package will help continue double-digit growth (see Table). The outlook for capital investment is boosted by the expected rise in corporate profits. Nomura Research Institute, for example, predicts a 13.6 percent rise in pretax earnings in FY 1987, the first such increase in three years. In addition, the public works spending contained in the stimulus package will boost public investment.

Industrial Output, Export Volume and Housing Starts

(percentage change from the same period, previous year)

	Mining and Manufacturing Production	Export Volume	Housing Starts
1984	11.1%	15.4%	4.4%
1985	4.6	4.7	4.1
1986	-0.4	-1.4	10.4
1986:I	1.2	-0.2	5.1
1986:II	-0.8	-0.9	3.0
1986:III	-1.1	-0.3	18.5
1986:IV	-0.7	-4.2	15.5
1987:I	0.7	-0.1	12.5
1987:II(p)	0.8	-3.9	23.6

Source: Bank of Japan, Ministry of International Trade and Industry and Japan Tariff Association

A large rise in retail sales in the April-May period indicates that personal consumption, which expanded at a real 7.3 percent annual rate in the January-March quarter, remains strong. Although the 3.6 percent rise won in the 1987 spring wage negotiations was the lowest on record, flat consumer prices in FY 1986 made it the largest inflation-adjusted increase since 1975. Consumers should be further encouraged by the planned reduction in income taxes. On August 7 the Liberal Democratic Party agreed to increase the cut to Y1.5 trillion ($10 billion) as part of an agreement to end a Diet boycott by the opposition parties and allow debate on tax reform to resume on August 18 following a 10-day recess. The parties also agreed to cut national and local income taxes by another Y2 trillion ($13.3 billion) in FY 1988. In addition, the LDP proposed delaying the controversial reform of the _maruyu_ tax-exempt savings system until April 1988 (see JEI Report No. 30B, August 7, 1987).

There are also signs of a turnaround in the manufacturing sector, which fell in tandem with export volume in 1986. Industrial production in the January-March period rose 0.7 percent above the year-earlier level, the first such increase in four quarters. This sector has been strengthened by brisk demand for automobiles in Japan. Domestic sales are running at an annual rate of 4.2 million, close to the 4.3 million record high in 1979, and partially offsetting a drop in exports to the United States. The manufacturing sector is credited with a modest improvement in the employment situation as well. Average overtime hours in June increased from the year-earlier level for the first time in 16 months, while the unemployment rate fell from May's record high 3.2 percent to 3 percent.

Although the overall picture is improving, there continues to be considerable disparity between industries and regions. The unemployment rate is 4.5

percent in the northern island of Hokkaido and 4.1 percent in Kyushu. A recent Keidanren poll reported that 62.8 percent of Japanese business managers do not believe the economy is on the track toward recovery.

Randall S. Jones

Defense Spending Remains On Track

Although Japan's projected 6.2 percent hike in defense spending for FY 1988 is lower than other recent increases -- defense agency officials had sought 6.7 percent -- it should be sufficient to keep the current five-year procurement program on track. In monetary terms the rise translates to Y218 billion ($1.5 billion at Y150=$1.00), bringing total spending to Y3,735.4 billion ($24.9 billion). Depending on Japan's economic performance, the increase will keep total spending above 1 percent of gross national product (spending recently crested the level) but it will not set in motion a stampede toward higher spending. The proposed defense budget benefited from lower costs for fuel as a result of the appreciated yen and higher-than-expected revenues during the past fiscal year (see JEI Report No. 30B, August 7, 1987). Additionally, the five-year procurement program's new status as an official government program -- as opposed to a planning document -- gives it leverage against other budget items.

While the defense budget maintains trends established earlier to strengthen the sustainability of the naval and air self-defense forces, the increase could come under criticism in the United States if it is seen as a means to fund the controversial FSX fighter-support aircraft program rather than to enhance Japan's overall defense position. The FSX decision, which has been delayed any number of times over the past two years, is due once again -- perhaps in September. Domestic lobbying has been intense; industry views the FSX program as a virtual last chance to strengthen its technological and production base in this aspect of the aerospace business.

Emotions are just as strong in U.S. circles, which generally favor acquisition of a U.S. system over a Japanese-developed product for reasons of cost and interoperability. Trade considerations are also a factor, especially in light of the yen's enhanced buying power. While cost estimates for the FSX vary widely, most American analysts say that acquiring a U.S. plane would be far less expensive than developing a domestic version.

The other component of Japan's comprehensive security program -- official development assistance -- received a preliminary increase of 8.6 percent, rising from Y658.1 billion ($4.4 billion) in FY 1987 to Y714.7 billion ($4.8 billion). Both aid and defense spending have received preferential budget treatment in the last several years, but the FY 1988 guidelines slate a much higher percentage hike for ODA than for defense. A quiet but significant debate in Tokyo and Washington concerns Japan's appropriate contributions to global security, particularly since the decision to abolish the cap on defense spending. While there is widespread agreement on the need for additional Japanese inputs, the most effective and politically palatable mix of defense and aid spending remains an issue. The relatively larger increase for aid suggests an emphasis on this less controversial approach.

The decision might also reflect the outlook of Finance Minister Kiichi Miyazawa, who has long supported aid programs but has been one of the most articulate opponents of higher defense spending among Japan's leading political figures. The defense program's official status insulates it from major spending reductions or even a spending freeeze, but with the government's leading defense spending proponent -- Prime Minister Yasuhiro Nakasone -- in his last days in office, that component of the budget may be more vulnerable in budget horse trading during the current drafting process than in recent years.

In contrast, aid programs have a far higher degree of public support and at least two of the three "new leaders" in Japan -- Mr. Miyazawa and former Foreign Minister Shintaro Abe -- are closely identified with aid spending. Finally, after the controversies associated with defense policies over the last two years -- including Japan's participation in the research phase of the Strategic Defense Initiative and the abolition of the 1 percent spending limit -- budget makers may have sought a breather in negotiations over next year's budget by seeking an increase that satisfies policy needs but does not revive opposition party or foreign criticism of defense programs.

Michael W. Chinworth

Banks Report Mixed Profits

Earnings figures show that financial liberalization has increased the already heated competitive atmosphere of Japan's banking market. While most Japanese banks experienced significant gains in profits during FY 1986, foreign banks watched their earnings decline.

According to a survey by an American accounting firm, foreign banks recorded mixed results in the year ended March 31, 1987 (see Table 1). The group surveyed grew by two to 79 firms, helping to push up total assets to just under Y16.6 trillion ($110.7 billion at Y150=$1.00), a gain of 7.1 percent. Recurring revenues dropped by 10.4 percent to Y946.2 billion ($6.3 billion), however, while pretax profits plunged 38.5 percent to Y18.7 billion ($124.7 million). Nevertheless, net profits edged up 0.8 percent to Y12.9 billion ($86 million).

Table 1: Top Foreign Banks in Japan, FY 1986

(ranked by pretax profits in millions of yen)

Rank	Company	Pretax Profits
1	Chemical Bank	Y2,111
2	Bankers Trust Co.	2,032
3	Citibank N.A.	1,635
4	Morgan Guaranty Trust Co.	1,546
5	Korea First Bank	1,518
6	Manufacturers Hanover Trust Co.	1,492
7	Irving Trust Co.	1,383
8	First National Bank of Chicago	1,328
9	Banque Paribas	1,100
10	First Interstate Bank of California	985

Japanese competitors, in contrast, recorded strong profit gains almost across the board (see Table 2). Top-ranked Fuji Bank, Ltd.'s pretax profits jumped almost 42 percent, while second-ranked Dai-Ichi Kangyo Bank, Ltd. (first in terms of total assets) reaped 46 percent more in pretax earnings. Pretax earnings growth rates at the low end of the rankings were even more spectacular, falling in the range of 100 percent.

Table 2: Top Domestic Banks in Japan, FY 1986

(ranked by pretax profits in millions of yen)

Rank	Company	Pretax Profits
1	Fuji Bank, Ltd.	Y218,899
2	Dai-Ichi Kangyo Bank, Ltd.	205,914
3	Mitsubishi Bank, Ltd.	194,086
4	Sumitomo Bank, Ltd.	181,132
5	Sanwa Bank, Ltd.	180,185
6	Mitsubishi Trust & Banking Corp.	155,944
7	Industrial Bank of Japan, Ltd.	150,981
8	Sumitomo Trust & Banking Co., Ltd.	145,710
9	Mitsui Bank, Ltd.	144,782
10	Mitsui Trust & Banking Co., Ltd.	107,447

Note: Unconsolidated results

Source: Japan Economic Journal

The entry of domestic banks into areas previously reserved for foreign banks was a major factor in the results. Domestic institutions grabbed market share in foreign exchange operations, foreign currency-denominated loans and overseas transactions (particularly in the European markets). Given their superior client base, it is not surprising that these firms quickly displaced foreign banks as the major players in these markets.

In fiscal 1985 these areas were major money-earners for foreign firms because of volatile exchange markets and a frenzy of foreign bond buying. Unlike their domestic counterparts, foreign banks actively and aggressively traded foreign currencies and futures for Japanese clients, earning handsome fees. Most analysts agree that as exchange rates grew more stable in the latter part of FY 1986, the profit potential in the exchange market declined. Similarly, the growth of Japanese bond purchases started to level off, putting another dent in earnings.

To counter these developments, foreign banks are retreating to niche markets, using mutual funds, specialized foreign currency dealing and futures of various kinds in their counterattack. One promising area is the management of trusts denominated in foreign currencies and tokkin funds (specified accounts) aimed at overseas markets. Japanese regional and sogo (mutual savings and loan) banks, as well as medium-sized companies, had entrusted an estimated $1 billion worth of these funds to foreign institutions as of February.

Increased interest in foreign stocks and real estate is one motivation behind this development.

Whether these strategies will help remains to be seen. Given the fact that Japanese banks now dominate global bank rankings (in terms of assets), foreign banks face competitors with extremely deep pockets. It is clear, however, that financial liberalization is having a significant impact on the competitive atmosphere of the Japanese market. All financial institutions, foreign and domestic, must adapt in order to survive.

Jon Choy

Bearing Makers File National Security Trade Complaint

U.S. manufacturers of bearings are in trouble. Virtually everyone agrees on this point. Why is another matter. Industry executives place the blame squarely on their foreign rivals, arguing that expanding imports over the last 20 years, particularly from Japan, have eroded the competitive position of American makers. An equally controversial question is whether the bearings industry requires government help. U.S. corporate officials have no reservations on this score. Maintaining that only an import rollback will insure adequate domestic supplies of a component vital to the functioning of weapons systems as well as military and commercial transportation equipment and most types of industrial machinery, the Anti-Friction Bearing Manufacturers Association has appealed to the Reagan administration for across-the-board protection from foreign competition on national security grounds. In a petition filed July 17 under Section 232 of the 1962 Trade Expansion Act, the trade association asked the government for import quotas ranging from zero for high precision grades of bearings used in military applications to roughly 34 percent of apparent domestic consumption on a volume basis for commodity products.

American producers of both ball bearings (used when speed is the key requirement) and roller bearings (for applications where load-bearing capacity is more important) have unquestionably fallen on hard times. For starters, domestic demand for bearings has increased slowly during the current economic expansion because of less-than-peak conditions in a handful of major end-users markets. Output in the automotive industry -- the single-largest customer, accounting for nearly one-fourth of consumption -- is still below the levels of the late 1970s. The same is true in the farm machinery, construction equipment, machine tool and oilfield/mining equipment industries. Demand has strengthened in the aerospace industry and a few other important capital goods markets, but growth in these sectors has barely offset reduced orders from elsewhere.

In the industry's version of its problems, the demand side of the picture takes a definite backseat to the increased inroads foreign suppliers have made in the U.S. market. Imports of ball and roller bearings and parts totaled $662.9 million last year, with 44 percent of this amount coming from Japan. But because offshore producers have concentrated on low-value, high-volume products, domestic makers argue that imports' estimated 17 percent market share in dollar terms seriously understated the problems caused by foreign competition. The true measure, they say, was 1986's 64.5 percent import penetration

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STATISTICAL PROFILE

PART I: JAPAN'S ECONOMY IN 1986

Japan Economic Institute 1000 Connecticut Avenue, N.W., Washington, D.C. 20036 202·296·5633

Table of Contents

Table 1: Japan's Gross National Product at 1980 Constant Prices, 1982-1986 1
Table 2: Major Interest Rates in Japan, 1982-1986 3
Table 3: Money Supply in Japan, 1982-1986 3
Table 4: Japan's General Account Expenditures (Revised), FY 1982-FY 1986 4
Table 5: Japan's Discretionary General Account Spending (Revised), FY 1982-FY 1986 5
Table 6: Japan's General Account Revenues (Revised), FY 1982-FY 1986 5
Table 7: Uses and Sources of Japan's Fiscal Investment and Loan Program Outlays (Initial), FY 1982-FY 1986 6
Table 8: Japan's Industrial Production Index by Sector, 1982-1986 7
Table 9: Japan's Index of Industrial Production by End-Use Classification, 1982-1986 7
Table 10: Japan's Index of Producers' Inventories of Finished Goods, 1982-1986 8
Table 11: Japan's Index of Consumption of Materials, 1982-1986 8
Table 12: Japan's Index of Inventories of Materials, 1982-1986 9
Table 13: Japan's Index of Manufacturing Operating Rates, 1982-1986 9
Table 14: Residential Construction Starts in Japan, 1982-1986 9
Table 15: Japan's Labor Force Survey, 1982-1986 10
Table 16: Employment Index of Regular Workers in Japan, 1982-1986 10
Table 17: Nominal Wage Index of Regular Workers in Japan, 1982-1986 11
Table 18: Average Monthly Wages of Manufacturing Employees in Japan by Industry, 1982-1986 11
Table 19: Index of Labor Productivity in Japan, 1982-1986 12
Table 20: Japan's Consumer Price Index, 1982-1986 12
Table 21: Japan's Wholesale Price Index by Industry, 1982-1986 13
Table 22: Japan's Wholesale Price Index by End-Use Classification, 1982-1986 13

For comparable data going back to 1974 consult the Japan Economic Institute's annual Yearbook of U.S.-Japan Economic Relations.

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Table 1: Japan's Gross National Product at 1980 Constant Prices, 1982-1986

(in billions of yen, seasonally adjusted, quarterly figures at annual rates)

	1982	1983	1984	1985	1986
Gross National Product	Y256,395.2	Y264,703.7	Y278,140.0	Y291,207.0	Y298,307.8
	(3.1%)	(3.2%)	(5.1%)	(4.7%)	(2.4%)
Personal Consumption Spending	148,971.0	153,781.5	157,989.5	162,103.4	166,456.2
	(4.1%)	(3.2%)	(2.7%)	(2.6%)	(2.7%)
Private Residential Construction	14,837.2	13,917.2	13,641.3	14,002.1	15,417.7
	(-0.7%)	(-6.2%)	(-2.0%)	(2.6%)	(10.1%)
Private Fixed Nonresidential Investment	40,618.7	41,720.7	46,506.8	52,224.7	55,593.1
	(2.5%)	(2.7%)	(11.5%)	(12.3%)	(6.4%)
Change in Business Inventories	1,725.1	795.8	1,402.2	2,273.1	1,160.2
	(0.3%)	(-53.9%)	(76.2%)	(62.1%)	(-49.0%)
Government Current Expenditures	25,099.1	25,838.2	26,554.2	27,072.8	28,858.0
	(1.9%)	(2.9%)	(2.8%)	(2.0%)	(6.6%)
Government Fixed Investment	23,437.7	23,052.2	22,405.2	20,935.6	21,877.6
	(-1.0%)	(-1.6%)	(-2.8%)	(-6.6%)	(4.5%)
Change in Government Inventories	-387.9	-352.8	167.5	302.2	804.3
	(*)	(*)	(*)	(80.4%)	(166.1%)
Net External Sector	2,094.3	5,950.8	9,473.3	12,293.1	8,140.6
	(62.2%)	(184.1%)	(59.2%)	(29.8%)	(-33.8%)
Exports of Coods and Services and Factor Income Received	42,779.0	44,555.6	52,351.8	55,133.4	52,504.5
	(3.6%)	(4.2%)	(17.5%)	(5.3%)	(-4.8%)
Imports of Goods and Services and Factor Income Paid	40,684.7	38,604.8	42,878.5	42,840.3	44,363.9
	(1.7%)	(-5.1%)	(11.1%)	(-0.1%)	(3.6%)

(continued)

Table 1: Japan's Gross National Product at 1980 Constant Prices, 1982-1986 (continued)

(in billions of yen, seasonally adjusted, quarterly figures at annual rates)

	January-March 1985	April-June 1985	July-September 1985	October-December 1985	January-March 1986	April-June 1986	July-September 1986	October-December 1986
Gross National Product	Y285,979.2 (3.0%)	Y289,881.2 (5.6%)	Y292,358.4 (3.5%)	Y295,760.3 (4.7%)	Y294,483.4 (-1.7%)	Y297,230.1 (3.8%)	Y299,438.0 (3.0%)	Y301,619.4 (2.9%)
Personal Consumption Spending	160,404.1 (3.2%)	161,612.6 (3.1%)	162,624.8 (2.5%)	163,477.4 (2.1%)	164,123.7 (1.6%)	166,134.2 (5.0%)	168,282.5 (5.3%)	167,048.0 (-2.9%)
Private Residential Construction	13,879.5 (4.4%)	14,098.0 (6.5%)	13,893.7 (-5.7%)	14,124.4 (6.8%)	14,340.6 (6.3%)	14,808.5 (13.7%)	15,851.9 (31.3%)	16,625.4 (21.0%)
Private Fixed Nonresidential Investment	48,917.7 (1.7%)	51,527.0 (23.1%)	53,426.6 (15.6%)	54,811.3 (10.8%)	54,983.4 (1.3%)	55,204.3 (1.6%)	55,471.9 (2.0%)	56,617.8 (8.5%)
Change in Business Inventories	2,742.1 (475.4%)	2,288.8 (-51.5%)	1,883.1 (-54.2%)	2,172.1 (77.0%)	1,726.5 (-60.1%)	639.5 (-98.1%)	920.4 (329.1%)	1,351.4 (364.8%)
Government Current Expenditures	26,946.3 (2.2%)	26,879.2 (-1.0%)	27,109.0 (3.5%)	27,370.1 (3.9%)	27,606.7 (3.5%)	27,719.2 (1.6%)	28,058.0 (5.0%)	32,065.4 (70.6%)
Government Fixed Investment	21,699.7 (-4.4%)	20,212.7 (-24.7%)	20,606.2 (8.0%)	20,960.5 (7.1%)	21,022.4 (1.2%)	21,785.4 (15.3%)	22,180.2 (7.5%)	22,428.9 (4.6%)
Change in Government Inventories	68.8 (*)	109.3 (*)	430.4 (*)	608.7 (*)	39.6 (*)	3,251.8 (*)	1,795.1 (*)	-1,866.9 (*)
Net External Sector	11,321.1 (-11.5%)	13,153.6 (82.2%)	12,384.7 (-21.4%)	12,235.9 (-4.7%)	10,640.6 (-42.8%)	7,687.2 (-72.8%)	6,878.0 (-35.9%)	7,349.4 (30.4%)
Exports of Goods and Services and Factor Income Received	54,801.1 (-0.5%)	56,710.2 (14.7%)	54,983.3 (-11.6%)	53,973.3 (-7.1%)	52,208.9 (-12.4%)	53,044.1 (6.6%)	52,640.0 (-3.0%)	52,127.4 (-3.8%)
Imports of Goods and Services and Factor Income Paid	43,480.1 (2.6%)	43,556.5 (0.7%)	42,598.6 (-8.5%)	41,737.5 (-7.8%)	41,568.3 (-1.6%)	45,356.9 (41.8%)	45,762.0 (3.6%)	44,778.0 (-8.3%)

*Cannot be calculated or meaningless.

Source: Economic Planning Agency

Table 2: Major Interest Rates in Japan, 1982-1986

(percent per annum)

					Savings Deposits*			
					Commercial Banks		Post Office	
	Central Bank Discount Rate*	Long-Term Prime Lending Rate*	Call Rate**	Average Interest Rate on Loans and Discounts of All Banks*	Ordinary Deposits	Six-Month Time Deposits	Ordinary Deposits	One-Year Savings Certificates
1982	5.5%	8.6%	6.94%	7.15%	1.75%	5.0%	3.12%	4.25%
1983	5.0	8.2	6.39	6.81	1.75	5.0	3.12	4.25
1984	5.0	7.6	6.10	6.57	1.50	4.75	2.88	4.0
1985	5.0	7.2	6.46	6.47	1.50	4.75	2.88	4.0
1986	3.0	6.2	4.79	5.51	0.26	3.01	1.68	2.26

*End of period.
**Average for period.

Source: Bank of Japan

Table 3: Money Supply in Japan, 1982-1986

(in billions of yen, average for period)

	Outstanding Money Supply (M_2+CDs)*	Change
1982	Y235,336	9.2%
1983	252,640	7.4
1984	272,360	7.8
1985	295,183	8.4
1986	320,732	8.7

*Includes currency in circulation, demand deposits and time deposits (excluding trust accounts) held by commercial banks, plus certificates of deposit.

Source: Bank of Japan

Table 4: Japan's General Account Expenditures (Revised), FY 1982-FY 1986*

(in billions of yen and percentage change)

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986	
Total Expenditures	Y47,562.1	0.9%	Y50,839.4	6.9%	Y51,513.4	1.3%	Y53,222.9	3.3%	Y53,824.8	1.1%
Social Security	9,141.6	3.1	9,231.3	1.0	9,683.9	4.9	9,830.8	1.5	10,090.3	2.6
Public Assistance	1,080.6	8.9	1,129.7	4.6	1,187.5	5.1	1,082.2	-8.9	1,110.4	2.6
Social Welfare	1,603.6	6.3	1,917.5	19.6	2,013.2	5.0	2,056.2	2.1	1,977.8	-3.8
Social Insurance	5,658.2	1.6	5,378.9	-4.9	5,619.1	4.5	5,847.5	4.1	6,137.3	5.0
Health Services	425.6	1.7	435.4	2.3	485.8	11.6	464.4	-4.4	497.2	7.1
Unemployment Compensation	373.7	-2.2	369.8	-1.1	378.3	2.3	380.5	0.6	367.6	-3.4
Education and Science	4,832.6	0.2	4,834.3	0.0	4,920.3	1.8	4,904.3	-0.3	4,886.6	-0.4
Compulsory Education	2,220.5	2.4	2,254.5	1.5	2,368.8	5.1	2,415.2	2.0	2,414.9	-0.0
Transfer to School Account	1,015.5	0.1	1,015.6	0.0	1,096.9	8.0	1,075.1	-2.0	1,083.7	0.8
Science and Technology Promotion	381.8	3.0	392.0	2.7	374.6	-4.4	375.4	0.2	381.8	1.7
School Facilities	528.8	-9.3	489.8	-7.4	427.3	-12.8	385.5	-9.8	350.0	-9.2
School Aid	595.2	0.1	592.0	-0.5	566.6	-4.3	569.6	0.5	575.7	1.1
Student Loans	90.8	0.2	90.3	-0.5	86.2	-4.6	83.6	-3.0	80.5	-3.7
Public Works	7,281.3	4.0	7,224.3	-0.8	6,882.0	-4.7	6,922.3	0.6	6,946.3	0.3
Erosion and Flood Control	1,106.4	-0.1	1,107.4	0.1	1,098.4	-0.8	1,082.8	-1.4	1,101.4	1.7
Road Improvement	1,891.9	-0.5	1,893.3	0.1	1,899.9	0.3	1,856.1	-2.3	1,826.3	-1.6
Harbors and Airports	522.6	-0.2	524.1	0.3	519.8	-0.8	511.9	-1.5	517.3	1.1
Housing	877.9	4.1	894.3	1.9	913.9	2.2	927.9	1.5	940.2	1.3
Social Infrastructure	987.2	0.1	988.2	0.1	980.3	-0.8	970.3	-1.0	989.0	1.9
Agricultural Infrastructure	899.2	-0.1	900.0	0.1	892.1	-0.9	879.0	-1.5	886.9	0.9
Forestry and Industrial Water Supplies	178.4	-1.2	177.1	-0.7	173.2	-2.2	169.6	-2.1	170.4	0.5
Disaster Reconstruction	806.1	47.2	728.4	-9.6	393.5	-46.0	514.0	30.6	503.5	-2.0
Reserves	11.7	-0.3	11.4	-3.1	10.9	-3.7	10.7	-2.2	11.3	5.6
Pensions	1,891.7	4.9	1,890.0	-0.1	1,885.8	-0.2	1,863.7	-1.2	1,850.1	-0.7
Civil Servants	135.4	-0.5	132.7	-2.0	128.2	-3.4	124.8	2.8	121.4	-2.7
Veterans	1,590.1	5.4	1,603.6	0.9	1,601.1	-0.2	1,578.7	-1.4	1,562.6	-1.0
Other Pensions	155.9	5.0	143.1	-8.2	146.0	2.0	149.9	2.7	155.9	4.0
Administrative Costs	10.3	3.4	10.6	2.3	10.5	-0.9	10.4	-1.4	10.3	-0.1
Local Finance	7,976.4	-8.6	7,672.9	-3.8	9,219.0	20.2	9,690.1	5.1	9,734.7	0.5
Local Allocation Tax	7,535.2	-6.3	7,315.1	-2.9	9,036.1	23.5	9,690.1	7.2	9,734.7	0.5
Interest Support and Special Grants	441.1	-20.2	357.8	-18.9	182.9	-48.6	0.0	-100.0	0.0	0.0
National Debt Service	6,906.9	3.8	8,167.5	18.3	9,232.7	13.0	10,180.5	10.3	10,664.4	4.8
Defense	2,566.6	3.0	2,761.0	7.6	2,961.5	7.3	3,169.7	7.0	3,338.0	5.3
Economic Cooperation	474.9	11.7	498.2	4.9	540.9	8.6	581.2	7.5	600.5	3.3
Small Business Assistance	244.3	-1.5	238.9	-2.2	230.4	-3.6	211.9	-8.0	225.6	6.5
Energy Support	559.3	12.7	557.4	-0.3	610.4	9.5	626.2	2.6	570.5	-8.9
Food Agency Account	1,005.5	-0.9	917.2	-8.8	808.6	-11.8	695.2	-14.0	613.8	-11.7
Miscellaneous	4,451.0	-0.6	6,636.4	49.1	4,367.9	-34.2	4,346.9	-0.5	4,104.0	-5.6
Reserves	230.0	40.1	210.0	-8.7	170.0	-19.0	200.0	17.6	200.0	0.0

*Revised budget figures include the supplementary budget.

Source: Ministry of Finance

Table 5: Japan's Discretionary General Account Spending (Revised), FY 1982-FY 1986*

(in billions of yen and percentage change)

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986	
Total Expenditures	Y47,562.1	0.9%	Y50,839.4	6.9%	Y51,513.4	1.3%	Y53,222.9	3.3%	Y53,824.8	1.1%
Minus										
Debt Service and Transfers to Local Governments	14,442.2	-1.7	15,482.7	7.2	18,268.9	18.0	19,870.6	8.8	20,399.1	2.7
Equals										
Discretionary Spending	33,120.0	2.1	35,356.8	6.8	33,244.5	-6.0	33,352.3	0.3	33,425.7	0.2

*Revised budget figures include the supplemental budget.

Source: Ministry of Finance

Table 6: Japan's General Account Revenues (Revised), FY 1982-FY 1986*

(in billions of yen and percentage change)

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986	
Total Revenues	Y47,562.1	1.7%	Y50,839.4	6.9%	Y51,513.4	1.3%	Y53,222.9	3.3%	Y53,824.8	1.1%
Tax and Stamp Revenues	30,478.0	-4.3	31,902.0	4.7	34,835.0	9.2	38,145.0	9.5	39,440.0	3.4
Direct Taxes	22,524.0	-5.4	23,835.0	5.8	26,193.0	9.9	28,579.0	9.1	29,469.0	3.1
Income Taxes	12,769.0	-1.3	13,545.0	6.1	13,985.0	3.2	15,378.0	10.0	16,393.0	6.6
Corporate Taxes	9,056.0	-12.5	9,497.0	4.9	11,333.0	19.3	12,197.0	7.6	11,725.0	-3.9
Indirect Taxes	7,954.0	-0.8	8,067.0	1.4	8,642.0	7.1	9,566.0	10.7	9,971.0	4.2
Liquor Taxes	1,767.0	-3.4	1,860.0	5.3	1,992.0	7.1	1,955.0	-1.9	1,974.0	1.0
Gasoline Taxes	1,624.0	6.8	1,601.0	-1.4	1,617.0	1.0	1,554.0	-3.9	1,572.0	1.2
Commodity Taxes	1,234.0	-3.0	1,314.0	6.5	1,503.0	14.4	1,538.0	2.3	1,627.0	5.8
Monopoly Profits	761.9	-2.2	1,004.2	31.8	1,024.6	2.0	6.6	-99.4	7.5	13.6
Public Enterprise Receipts	14.4	17.7	15.1	5.1	15.4	1.4	15.9	3.2	16.7	5.0
Sale of Public Properties	67.3	-7.7	82.7	22.8	92.3	11.7	157.9	71.1	134.5	-14.8
Miscellaneous	1,854.3	25.8	3,843.3	107.3	2,282.6	-40.6	2,254.0	-1.3	2,289.7	1.6
Public Bonds	14,345.0	11.2	13,790.0	-3.9	12,865.0	-6.7	12,438.0	-3.3	11,495.0	-7.6
Carryover Surplus	41.3	-25.3	202.2	390.1	398.5	97.1	205.4	-49.5	441.3	114.8

*Revised budget figures include the supplemental budget.

Source: Ministry of Finance

Table 7: Uses and Sources of Japan's Fiscal Investment and Loan Program Outlays (Initial), FY 1982-FY 1986

(in billions of yen and percentage change)

	FY 1982		FY 1983		FY 1984		FY 1985		FY 1986	
Total Outlays	Y20,288.8	4.1%	Y20,702.9	2.0%	Y21,106.6	1.9%	Y20,858.0	-1.2%	Y22,155.1	6.2%
Housing	5,130.1	0.4	5,304.1	3.4	5,289.5	-0.3	5,289.3	-0.0	5,856.2	10.7
Other Social Infrastructure	2,863.2	5.4	2,764.8	-3.4	3,007.5	8.8	3,280.9	9.1	3,694.5	12.6
Welfare	701.3	6.5	652.0	-7.0	637.9	-2.1	595.7	-6.6	625.9	5.1
Education	762.8	-3.9	783.0	2.6	777.1	-0.8	745.3	-4.1	678.2	-9.0
Small Business	3,905.9	2.1	3,942.2	0.9	3,968.3	0.7	3,764.4	-5.1	3,700.0	-1.7
Agriculture	906.8	-1.1	963.0	6.2	1,034.8	7.5	890.6	-13.9	902.1	1.3
Land Conservation and Disaster Work	310.2	11.9	332.5	7.4	379.1	13.8	472.8	24.7	422.7	-10.6
Roads	1,472.6	24.5	1,583.7	7.5	1,711.7	8.1	1,826.4	6.7	2,024.4	10.8
Transportation and Communications	1,949.0	-0.3	1,924.6	-1.2	1,887.6	-1.9	1,763.4	-6.6	2,015.1	14.3
Regional Development	538.1	20.7	511.4	-5.0	500.0	-2.2	511.2	2.2	566.1	10.7
Industry and Technology	635.6	7.1	626.2	-1.5	620.3	-0.9	603.3	-2.7	635.9	5.4
Foreign Trade and Economic Cooperation	1,113.2	10.8	1,315.4	18.2	1,292.8	-1.7	1,114.7	-13.8	1,034.0	-7.2
Total Revenues	Y23,788.8	3.5%	Y24,402.9	2.6%	Y24,706.6	1.2%	Y25,858.0	4.7%	Y27,155.1	5.0%
Industrial Investment Special Account	18.9	0.0	5.2	-72.5	4.8	-7.7	31.4	554.2	61.5	95.9
Trust Fund Bureau Fund	19,568.9	0.5	19,135.3	-2.2	18,905.2	-1.2	20,029.0	5.9	20,738.6	3.5
Postal Savings	7,900.0	-11.2	7,900.0	0.0	6,900.0	-12.7	6,400.0	-7.2	7,000.0	9.4
Pension Contributions	4,300.0	10.3	4,100.0	-4.7	3,850.0	-6.1	3,950.0	2.6	4,300.0	8.9
Other Revenues	7,368.9	10.3	7,135.3	-3.2	8,155.2	14.3	9,679.0	18.7	9,438.6	-2.5
Postal Life Insurance Fund	1,981.0	4.8	2,354.4	18.8	2,586.6	9.9	2,587.6	0.0	3,145.0	21.5
Government-Guaranteed Bonds and Borrowings	2,220.0	38.7	2,908.0	31.0	3,210.0	10.4	3,210.0	0.0	3,210.0	0.0

Source: Ministry of Finance

Table 8. Japan's Industrial Production Index by Sector, 1982-1986

(1980 = 100)

	Total		Mining	Manufacturing	Steel	Nonferrous Metals	Fabricated Metal Products	Nonelectric Machinery	Electric Machinery	Transport Equipment
	Index	Change								
1982	101.3	0.3%	96.2	101.4	91.4	92.6	99.0	100.6	125.2	99.1
1983	104.9	3.6	95.8	104.9	89.1	95.5	94.2	99.8	149.7	94.6
1984	116.5	11.1	95.3	116.7	98.3	100.4	98.5	113.0	193.4	104.1
1985	121.9	4.6	96.3	122.0	100.4	100.1	99.2	121.1	215.0	107.9
1986	121.4	-0.4	94.4	121.6	94.4	99.2	97.7	112.6	227.9	104.8

	Precision Instruments	Nonmetallic Mineral Products	Chemicals	Petroleum and Coal Products	Pulp, Paper and Paper Products	Textiles	Lumber and Wood Products	Foods
1982	103.5	91.5	102.5	88.4	97.1	97.4	87.4	101.1
1983	110.3	92.7	108.8	85.7	102.7	96.8	84.6	103.0
1984	128.4	95.9	117.9	88.8	108.0	99.0	80.8	101.5
1985	150.2	95.5	121.7	84.5	112.8	98.3	79.2	102.1
1986	157.1	92.1	122.2	81.1	116.1	94.3	79.2	103.0

Source: Ministry of International Trade and Industry

Table 9: Japan's Index of Industrial Production by End-Use Classification, 1982-1986

(1980 = 100)

	Final Demand Goods					Producer Goods
	Total	Capital Goods	Construction Materials	Consumer Goods		
				Durable	Nondurable	
1982	104.2	106.4	90.5	110.1	106.5	97.7
1983	106.4	106.5	89.6	117.5	110.0	103.0
1984	116.6	123.3	89.8	136.9	113.0	116.5
1985	123.0	134.0	88.9	147.7	116.2	120.5
1986	123.7	135.0	88.3	148.0	117.5	118.6

Source: Ministry of International Trade and Industry

Table 10: Japan's Index of Producers' Inventories of Finished Goods, 1982-1986

(1980 = 100)

	Total	Mining	Manufacturing	Steel	Nonferrous Metals	Fabricated Metal Products	Nonelectric Machinery	Electric Machinery	Transport Equipment
1982	101.4	87.9	101.5	103.9	118.3	88.4	113.6	110.6	114.2
1983	96.2	79.5	96.2	98.5	94.7	89.1	110.1	98.3	103.2
1984	99.0	92.5	99.1	101.4	100.0	87.7	118.2	104.8	103.6
1985	107.5	105.4	107.6	107.4	104.4	88.3	133.9	150.5	111.3
1986	107.4	128.5	107.3	103.1	100.9	86.8	139.5	145.2	105.1

	Precision Instruments	Nonmetallic Mineral Products	Chemicals	Petroleum and Coal Products	Pulp, Paper and Paper Products	Textiles	Lumber and Wood Products	Foods
1982	137.9	105.6	98.1	83.0	100.4	102.6	92.1	100.4
1983	128.6	101.0	92.3	82.0	98.5	103.5	88.5	97.9
1984	125.0	99.6	99.0	79.9	107.0	101.7	92.0	103.1
1985	140.2	108.4	104.4	74.8	118.8	109.0	86.3	99.7
1986	187.7	112.5	105.5	74.3	122.7	112.2	79.1	99.8

Source: Ministry of International Trade and Industry

Table 11: Japan's Index of Consumption of Materials, 1982-1986

(1980 = 100)

	Manufacturing	Steel	Non-ferrous Metals	Fabricated Metal Products	Machinery	Nonmetallic Mineral Products	Chemicals	Petroleum and Coal Products	Pulp, Paper and Paper Products	Textiles	Lumber and Wood Products	Other Industries
1982	91.4	89.7	91.4	93.8	95.1	83.2	89.3	84.7	94.5	94.1	88.1	94.3
1983	92.2	86.1	95.6	91.6	98.3	81.3	92.3	81.6	99.2	92.2	85.2	99.8
1984	99.6	93.4	99.1	89.6	111.5	84.0	102.5	84.6	104.2	93.7	82.2	104.3
1985	101.3	94.1	98.2	90.6	119.2	80.5	102.6	79.3	106.8	92.0	81.5	105.9
1986	97.5	85.5	98.1	90.5	113.1	78.8	102.4	75.9	108.8	86.7	81.9	104.9

Source: Ministry of International Trade and Industry

Table 12: Japan's Index of Inventories of Materials, 1982-1986

(1980 = 100)

	Manufacturing	Steel	Non-ferrous Metals	Fabricated Metal Products	Machinery	Nonmetallic Mineral Products	Chemicals	Petroleum and Coal Products	Pulp, Paper and Paper Products	Textiles	Lumber and Wood Products	Other Industries
1982	94.9	101.1	127.5	88.2	95.1	86.7	89.7	97.8	88.8	88.9	84.7	75.4
1983	87.1	94.5	122.8	80.1	86.3	74.2	85.2	82.6	85.6	85.7	85.9	71.1
1984	86.2	86.5	118.2	75.4	94.9	73.0	90.5	83.4	87.0	85.9	80.3	69.0
1985	85.0	81.7	114.8	73.6	100.6	73.0	88.6	84.3	82.0	82.2	84.6	62.1
1986	81.0	80.8	93.3	67.9	89.2	68.4	88.3	84.0	78.3	76.6	84.0	57.4

Source: Ministry of International Trade and Industry

Table 13: Japan's Index of Manufacturing Operating Rates, 1982-1986

(1980 = 100)

	Total	Steel	Non-ferrous Metals	Fabricated Metal Products	Nonelectric Machinery	Electric Machinery	Transport Equipment	Precision Instruments	Nonmetallic Mineral Products	Chemicals	Petroleum and Coal Products	Pulp, Paper and Paper Products	Textiles
1982	92.6	87.9	89.5	92.8	92.7	95.5	92.8	89.4	89.3	90.9	84.8	96.9	98.6
1983	94.1	85.8	92.0	90.6	92.9	101.2	92.5	92.5	88.0	93.6	85.8	102.6	98.5
1984	101.0	95.3	94.7	96.8	106.2	110.4	92.9	107.4	88.1	103.1	100.1	107.6	99.2
1985	102.2	98.2	95.1	99.7	107.2	109.9	95.0	110.9	89.9	105.6	93.4	112.5	99.4
1986	97.3	92.3	93.4	98.4	95.0	100.6	91.0	102.5	86.7	105.8	89.5	115.6	98.4

Source: Ministry of International Trade and Industry

Table 14: Residential Construction Starts in Japan, 1982-1986

(units)

		Type of Housing		Owner-Occupant Relationship			
	Total	Public	Private	Owner-Built	Developer-Built	Rental Units	Other
1982	1,146,149	102,975	1,043,174	584,182	223,641	315,448	22,878
1983	1,136,797	94,909	1,041,888	478,833	243,265	394,495	20,204
1984	1,187,282	86,285	1,100,997	469,879	231,001	464,308	22,094
1985	1,236,072	81,305	1,154,767	464,697	224,018	527,042	20,315
1986	1,364,609	80,780	1,283,829	477,050	220,155	645,886	21,518

Source: Ministry of Construction

Table 15: Japan's Labor Force Survey, 1982-1986

(in thousands of persons)

	Working-Age Population*	Total Labor Force	Employed Labor Force	Totally Unemployed Labor Force	Unemployment Rate	Not in Labor Force	Ratio of Job Offers to Applications**
1982	91,160	57,740	56,380	1,360	2.4%	33,090	0.61
1983	92,320	58,890	57,330	1,560	2.6	33,050	0.60
1984	93,470	59,270	57,660	1,610	2.7	33,730	0.65
1985	94,650	59,630	58,070	1,560	2.6	34,500	0.68
1986	95,870	60,200	58,530	1,670	2.8	35,130	0.62

*People 15 years old and over.
**Excludes applications by new school graduates but includes those by people seeking part-time work.

Source: Prime Minister's Office and Ministry of Labor

Table 16: Employment Index of Regular Workers in Japan, 1982-1986

(1985 = 100)

	Total	Mining	Construction	Manufacturing	Foods and Tobacco	Textiles	Apparel	Lumber and Wood Products	Pulp and Paper Products	Publishing	Chemicals	Petroleum and Coal Products	Nonmetallic Mineral Products	Steel
1982	97.8	110.3	104.6	96.9	96.8	108.0	104.2	123.5	99.3	97.2	102.4	110.8	106.2	107.4
1983	98.1	106.1	103.8	96.8	98.8	105.2	101.6	114.5	99.4	98.1	100.9	106.3	103.0	104.3
1984	98.9	102.7	102.5	98.1	98.7	102.5	99.4	106.5	99.1	99.0	100.1	102.6	101.6	101.1
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	100.7	94.7	99.5	100.7	103.2	97.2	101.9	98.8	101.4	100.6	101.4	97.9	98.8	97.2

	Nonferrous Metals	Fabricated Metal Products	Nonelectric Machinery	Electric Machinery	Transport Equipment	Precision Instruments	Wholesale and Retail Trade	Finance and Insurance	Real Estate	Transportation and Communications	Utilities	Services
1982	97.7	100.5	97.8	83.6	97.6	91.7	97.9	101.0	95.7	104.4	106.0	93.1
1983	96.8	99.7	97.3	85.5	97.7	93.4	99.1	100.4	95.2	102.8	105.4	94.7
1984	99.1	99.2	98.2	93.3	98.2	96.7	99.5	100.2	98.1	101.4	102.5	96.9
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	100.4	101.3	101.2	101.6	99.2	101.0	100.8	101.2	100.2	97.6	99.7	102.5

Source: Ministry of Labor

Table 17: Nominal Wage Index of Regular Workers in Japan, 1982-1986

(1985 = 100)

	Total	Mining	Construction	Manufacturing	Foods and Tobacco	Textiles	Apparel	Lumber and Wood Products	Pulp and Paper Products	Publishing	Chemicals	Petroleum and Coal Products	Nonmetallic Mineral Products	Steel
1982	89.3	89.1	87.7	88.5	89.3	91.2	93.1	87.3	84.6	88.1	87.7	84.3	88.6	90.2
1983	92.5	92.7	91.0	91.9	93.1	94.7	95.4	90.9	89.0	92.2	91.8	88.3	92.2	91.9
1984	96.5	95.5	95.7	96.2	96.3	96.6	99.6	94.8	94.7	94.8	96.5	94.2	96.2	95.2
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	103.5	99.6	105.3	102.4	107.3	102.0	101.8	105.4	102.6	105.4	103.4	103.6	104.0	100.3

	Nonferrous Metals	Fabricated Metal Products	Nonelectric Machinery	Electric Machinery	Transport Equipment	Precision Instruments	Wholesale and Retail Trade	Finance and Insurance	Real Estate	Transportation and Communications	Utilities	Services
1982	87.0	89.3	89.9	88.6	87.4	86.2	89.7	87.0	90.5	89.7	88.9	90.9
1983	91.1	92.4	91.2	93.2	90.5	91.2	92.7	91.2	93.8	93.6	91.4	92.9
1984	95.4	97.0	96.1	98.1	95.4	94.1	97.0	95.4	97.9	97.4	95.6	96.6
1985	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	102.8	104.1	99.9	101.6	101.6	100.9	104.2	105.0	105.8	103.0	105.8	104.1

Source: Ministry of Labor

Table 18: Average Monthly Wages of Manufacturing Employees in Japan by Industry, 1982-1986

(in thousands of yen)

	Total	Foods and Tobacco	Textiles	Pulp and Paper Products	Chemicals	Nonmetallic Mineral Products	Steel	Nonferrous Metals	Fabricated Metal Products	Nonelectric Machinery	Electric Machinery	Transport Equipment	Precision Instruments
1982	Y269.6	Y220.4	Y192.1	Y269.1	Y341.0	Y261.2	Y355.0	Y296.6	Y261.4	Y309.3	Y254.4	Y307.1	Y252.1
1983	279.1	226.2	198.1	283.1	357.9	272.7	359.9	309.4	269.2	313.6	267.3	316.5	265.4
1984	292.3	233.7	202.2	301.4	376.3	284.7	373.5	324.3	282.7	330.8	281.7	333.6	274.0
1985	299.5	235.5	211.9	314.6	389.6	289.0	391.7	336.4	287.8	337.6	280.7	345.1	287.4
1986	305.4	250.6	216.9	322.0	402.8	299.2	392.1	345.1	298.5	334.9	283.6	348.3	288.9

Note: Includes overtime pay and bonuses.

Source: Ministry of Labor

Table 19: Index of Labor Productivity in Japan, 1982-1986

(1980 = 100)

	Total	Mining	Manufacturing	Foods	Textiles	Lumber and Wood Products	Pulp and Paper Products	Nonmetallic Mineral Products	Rubber Products	Chemicals
1982	103.4	100.2	103.4	100.4	104.5	93.3	104.1	100.4	97.1	106.8
1983	108.1	104.8	108.1	99.0	107.4	96.6	111.9	105.8	107.5	115.3
1984	118.8	105.7	118.9	98.1	113.2	95.8	119.1	111.2	111.7	125.7
1985	123.8	111.3	123.9	97.3	115.3	100.7	126.6	113.1	114.0	129.7
1986	126.6	121.1	126.6	99.2	116.3	114.0	133.7	112.5	113.4	130.9

	Petroleum and Coal Products	Steel	Nonferrous Metals	Fabricated Metal Products	Nonelectric Machinery	Electric Machinery	Transport Equipment	Precision Instruments
1982	91.3	96.5	97.7	100.3	100.6	118.4	100.4	104.9
1983	92.8	97.5	103.2	98.3	101.9	136.2	96.8	114.4
1984	101.4	109.3	106.8	99.1	113.4	163.5	107.8	133.4
1985	100.8	114.1	107.8	106.1	120.3	180.1	110.8	156.2
1986	103.8	111.4	108.4	106.6	114.0	188.5	110.9	172.0

Source: Japan Productivity Center

Table 20: Japan's Consumer Price Index, 1982-1986

(1985 = 100)

	Total		Food	Housing	Utilities	Furniture and Housewares	Clothing	Medical Care	Transportation	Education	Recreation	Miscellaneous
	Index	Change										
1982	94.1	2.8%	93.7	92.5	100.8	97.9	92.2	90.0	97.8	87.4	93.8	92.9
1983	95.8	1.8	95.6	95.4	100.5	98.5	94.3	91.2	97.0	91.7	96.1	96.5
1984	98.0	2.3	98.3	97.5	100.4	99.3	96.7	94.5	97.9	95.7	98.0	98.7
1985	100.0	2.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1986	100.6	0.6	100.2	102.5	95.0	100.0	102.2	101.9	99.3	103.6	101.5	102.0

Source: Management and Coordination Agency

Table 21: Japan's Wholesale Price Index by Industry, 1982-1986

(1980 = 100)

	Total		Foods	Textiles	Lumber and Wood Products	Pulp, Paper and Paper Products	Chemicals	Petroleum and Products	Nonmetallic Mineral Products	Steel	Nonferrous Metals
	Index	Change									
1982	103.2	1.8%	104.9	102.5	91.3	95.6	96.9	117.7	104.9	102.3	83.7
1983	100.9	-2.2	107.0	100.2	88.0	92.9	94.6	112.4	104.3	98.1	85.9
1984	100.6	-0.3	110.3	102.1	87.4	96.2	93.9	105.6	104.6	98.9	83.9
1985	99.5	-1.1	110.6	101.0	87.2	94.5	92.4	104.9	101.6	97.5	80.0
1986	90.2	-9.4	110.4	93.4	84.2	91.1	84.7	79.5	100.0	88.0	66.8

	Metal Products	Nonelectric Machinery and Precision Instruments	Electric Machinery	Transport Equipment	Miscellaneous Products	Agricultural, Forestry and Fishery Products	Mining Products	Utilities
1982	100.0	102.0	100.3	105.5	104.0	98.7	119.7	111.9
1983	100.4	100.4	97.2	105.4	104.8	98.0	106.1	112.0
1984	103.6	100.4	96.2	106.5	105.9	98.4	101.3	112.9
1985	103.8	100.5	93.6	106.3	104.7	94.3	101.9	113.3
1986	101.7	97.3	87.8	100.8	101.0	86.3	62.2	108.3

Source: Bank of Japan

Table 22: Japan's Wholesale Price Index by End-Use Classification, 1982-1986

(1980 = 100)

	Domestic Products										Exports			
			Intermediate Goods					Consumer Goods						
	Total	Raw Materials	Total	Semi-finished Goods	Con-struction Materials	Fuels and Energy	Capital Goods	Total	Durables	Nondurables	Total	Semi-finished Goods	Capital Goods	Consumer Goods
1982	103.0	110.5	100.7	97.3	96.1	117.6	103.8	103.7	99.2	105.1	105.1	101.8	107.7	103.6
1983	101.2	101.7	99.4	96.3	95.4	114.0	103.8	103.8	97.8	105.6	98.8	95.9	105.5	97.8
1984	100.8	99.2	98.9	96.4	96.5	109.2	103.8	104.5	97.5	106.6	99.4	96.4	106.4	98.2
1985	99.7	97.4	97.4	94.1	95.2	109.1	104.0	104.5	97.2	106.7	98.0	94.0	106.4	96.5
1986	91.0	66.9	89.2	86.4	92.7	89.9	102.4	102.9	95.6	105.0	83.8	76.6	94.8	85.8

Source: Bank of Japan

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JEI

REPORT

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IN THIS ISSUE:

Another Rise In The Yen? 1

Capital Adequacy Ratios Debated 3

Political Outlook 4

Conferees Named For Trade Bill 6

Textile Legislation Awaiting Floor Consideration 7

Statistical Supplement 9

Another Rise In The Yen?

After peaking at a postwar record high of Y137.25=$1.00 on April 27, the yen has since retreated to the Y150 level. Market analysts attribute the dollar's renewed strength to a surge in Japanese purchases of U.S. securities and to tensions in the Persian Gulf. In addition, the dollar has gotten a boost from favorable U.S. economic statistics, including the decline in the unemployment rate to 6 percent in July.

The recent stability of the yen is one of the factors pointing to an economic recovery in Japan. Last week the Wako Research Institute of Economics, which in June predicted a 7 percent rise in the pretax profits of 319 major Japanese manufacturing companies in FY 1987, revised its figure upward to 22.4 percent. The institute expects the fall in the yen since mid-May to boost the earnings of export-oriented firms. Other positive factors include brisk domestic demand for cars and consumer electronics products.

Exchange rate stability also encouraged Japanese purchases of U.S. Treasury bonds in the quarterly refinancing operation August 11-13. Some analysts expected that the large foreign exchange losses recorded by Japanese investors -- $10.2 billion for life insurance firms alone in FY 1986 -- would limit purchases this time around. Last week, though, Japanese investors accounted for 35 to 40 percent of the $9 billion in 30-year bonds auctioned.

The 3.8 percent dip in the yen from June to July has contributed to concerns about rising inflation. The wholesale price index rose 0.9 percent in July over the previous month, the largest increase since April 1980. Officials of the central bank attributed the rise to higher import prices due to the yen's decline and rising crude oil prices. Another factor was the increase in prices of building materials, reflecting the boom in housing construction. The concern, however, has probably been exaggerated; wholesale prices in July were 2.2 percent below a year ago and Nomura Research Institute predicts a modest 0.6 percent rise in consumer prices in the current fiscal year. Still, this marks a turnaround from the 0.5 percent decline recorded in the last half of FY 1986.

Major Japanese financial institutions expect the yen to remain in the 140-150 range during FY 1987 (see Table). The continued large U.S. trade deficit, though, remains a destabilizing factor in the market. The announcement that the June deficit was an unexpectedly large $15.7 billion caused a sharp 2.5 percent drop in the dollar in the following two trading days. Moreover, other analysts question the commitment of the new Federal Reserve Board chairman, Alan Greenspan, to defend the dollar. Shortly before his nomination June 2, Mr. Greenspan said the dollar will fall further as overseas demand for dollar investments declines.

Economic Forecasts for Japan in FY 1987

(percentage change in real terms)

	GNP	Private Capital Spending	Current Account Surplus*	Y/$ Exchange Rate
Mitsubishi Research Institute	2.3%	2.5%	$85.4	Y140.0
Tokai Bank, Ltd.	2.8	4.8	80.0	145.0
Fuji Bank, Ltd.	2.8	2.9	86.0	148.0
Sumitomo Bank, Ltd.	2.9	4.5	87.6	145.8
Sanwa Research Institute	3.4	4.7	89.5	145.0

*In billions of dollars.

The Bank of Japan's monetary policy is a key variable in the exchange rate outlook. A decision by the central bank to tighten credit in response to concern over inflation has boosted Japanese interest rates during the past few months and lowered the U.S.-Japan interest rate gap from 6 percentage points in May to about 4 percentage points. A further rise in Japanese rates, though, would threaten Japan's economic recovery, in addition to putting upward pressure on the yen. Bank of Japan governor Satoshi Sumita promised July 29 to continue expansionary monetary policies, suggesting that the exchange rate is likely to remain in its current zone in the near future. In the long term, however, Japan's higher rate of productivity growth and lower rate of inflation will cause the dollar to decline relative to the yen.

Randall S. Jones

Capital Adequacy Ratios Debated

As boundaries between national financial markets blur, Washington, London and Tokyo are directing attention to the methods used to evaluate the health of financial institutions. Discussions at the Bank for International Settlements have focused on how to calculate the ratio of capital to assets, referred to as the capital adequacy ratio or simply CAR (see JEI Report No. 11B, March 20, 1987).

CAR is important because it is a measure of how well a bank can absorb business losses without becoming endangered. Shareholders' equity plus any loan loss reserves are compared to total assets. For U.S. and European banks, the ratio averages about 5 percent; using the same accounting techniques, Japanese banks average just under 3 percent. Since internationally 12 of the top 20 banks ranked by assets are Japanese (the result in large part of the yen's sharp appreciation), there is some concern that Japanese banks are not as sound as they should be. In addition, foreign competitors charge that the lower CAR of Japanese banks gives them an unfair advantage in other markets.

In February the United States and Great Britain narrowed the ways of defining CAR to reflect the common features of their financial markets. Tokyo was caught off-guard and has been trying to build support for some provisions based on Japanese financial realities. The central issue is how to treat so-called "hidden reserves" or appreciated assets carried at book value. These can be quite significant because Japanese banks have held Japanese blue chip stocks and bonds for several decades. The recent run-up in the Tokyo Stock Exchange has further widened the gap between book and market values.

Ministry of Finance officials argue that these reserves should be included in CAR calculations. At first they proposed using the full market value but the latest proposal would allow banks to add 70 percent of the estimated value of hidden reserves to shareholders' equity. Such a move would have a major impact -- raising CARs to between 8 and 16 percent (see Table). Washington and London object to this approach, however, because of the extreme volatility of the Tokyo market, and have suggested dropping the level to 30 percent. MOF has said that it took this factor into account when it decided on the 70 percent figure.

MOF is moving in other ways to allay foreign concerns. It has already directed financial institutions to raise their CARs to at least 4 percent by the end of fiscal 1990. Observers estimate that this translates into an additional Y8 trillion ($53.3 billion at Y150=$1.00) in equity. To manage this in only four years, several major banks have already announced new stock or bond issues, and others will surely follow. Although some have attributed the tough Anglo-American stance to the increasing problems of third world debt (Japanese banks have the second-greatest exposure behind the Americans), others see it as an attempt to blunt the aggressive tactics of the Japanese banking industry.

Even if they are saddled by huge new fund-raising burdens, Japanese banks will continue to play an increasingly important role in global finance.

Jon Choy

Japanese Banks' Capital Ratios, March 31, 1987

(in percent)

Bank	Capital-to-Assets Ratio*	Including 70 Percent of Hidden Reserves**
Mitsubishi Bank, Ltd.	3.22%	11.93%
Mitsui Bank, Ltd.	2.97	10.94
Daiwa Bank, Ltd.	3.59	10.82
Kyowa Bank, Ltd.	3.81	10.61
Fuji Bank, Ltd.	3.31	9.70
Tokai Bank, Ltd.	2.92	9.70
Dai-Ichi Kangyo Bank, Ltd.	2.87	9.66
Sanwa Bank, Ltd.	3.02	9.36
Bank of Tokyo, Ltd.	3.53	9.19
Sumitomo Bank, Ltd.	3.11	9.09
Taiyo Kobe Bank, Ltd.	2.77	9.00
Saitama Bank, Ltd.	3.09	8.84
Mitsui Trust & Banking Co., Ltd.	3.44	16.28
Mistubishi Trust & Banking Corp.	3.81	15.94
Yasuda Trust & Banking Co., Ltd.	3.20	14.67
Sumitomo Trust & Banking Co., Ltd.	3.74	13.48

*Capital and reserves (not including acceptances and low-risk bank guarantees) as stated in public accounts less bad loan reserves.

**Hidden reserves are unrealized gains on assets not included in public accounts.

Source: Nihon Keizai Shimbun

Political Outlook

As the Diet's extraordinary session winds down, Japanese politicians are gearing up for the final jockeying to select the head of the Liberal Democratic Party. At this writing, it appears that Noboru Takeshita will be the victor in the race for party president and prime minister.

Four figures have emerged thus far: LDP executive director Takeshita; party executive council chairman Shintaro Abe; Finance Minister Kiichi Miyazawa; and former party vice president Susumu Nikaido. Political pundits largely share the belief that under the guidance of Deputy Prime Minister Shin Kanemaru, Mr. Abe has agreed to side with Mr. Takeshita in return for the latter's support for the party presidency once his term ends. Mr. Kanemaru has been a key figure in party matters in recent years and played a critical role

STATISTICAL SUPPLEMENT

Trade and Payments Data

(in millions of dollars unless otherwise indicated)

	1985	1986	January-June 1986	January-June 1987	April 1987	May 1987	June 1987
Japan's Balance of Payments							
Trade Balance	$55,986	$92,827	$38,474	$48,196*	$8,790*	$8,050*	$7,983*
Exports (f.o.b.)	174,015	205,591	97,083	106,337*	19,234*	18,155*	18,433*
Imports (f.o.b.)	118,029	112,764	58,609	58,141*	10,444*	10,105*	10,450*
Current Account Balance	49,169	85,845	35,767	43,532*	7,985*	7,088*	7,497*
Long-Term Capital (net)	-64,542	-131,461	-47,872	-76,442*	-12,575*	-12,661*	-18,997*
Overall Balance	-12,318	-44,767	-10,322	-19,329	-1,794	-1,451	-11,212
International Reserves (end of period)	26,510	42,239	33,905	69,273	68,620	68,935	69,273
Japan's Customs Clearance Trade							
Trade Balance	46,099	82,743	34,236	53,562*	7,552	6,429	6,609*
Exports (f.o.b.)	175,638	209,151	98,665	121,836*	19,505	18,621	18,799*
Cars	25,402	32,945	15,912	17,025*	3,599	3,107	2,843*
Steel	13,566	12,706	6,154	5,864*	1,049	960	1,018*
Imports (c.i.f.)	129,539	126,408	64,429	68,275*	11,953	12,192	12,191*
Crude Oil	34,599	19,481	12,388	10,057*	1,840	1,423	1,456*
Japan-U.S. Trade							
Trade Balance	39,485	51,401	23,034	24,642*	5,137	4,449	4,014*
Exports (f.o.b.)	65,278	80,456	37,617	39,186*	7,432	6,957	6,794*
Imports (c.i.f.)	25,793	29,054	14,583	14,543*	2,295	2,508	2,780*
U.S.-Japan Trade							
Trade Balance (f.a.s./c.i.f.)	-49,749	-58,575	-28,702	-29,738	-4,946	-5,074	-5,345
Exports (f.a.s.)	22,631	26,882	13,072	12,574	2,171	2,152	2,293
Imports (c.i.f.)	72,380	85,457	41,774	42,312	7,117	7,225	7,638
Trade Balance (f.a.s./Customs)	-46,152	-55,030	-26,888	-28,054	-4,662	-4,782	-5,040
Exports (f.a.s.)	22,631	26,882	13,072	12,574	2,171	2,152	2,293
Industrial Supplies	8,680	8,752	4,122	4,630	768	787	807
Capital Goods	5,939	6,728	3,022	3,230	592	523	605
Food and Feed	5,001	5,043	2,344	2,475	421	449	476
Consumer Goods	1,416	1,690	790	1,207	201	249	235
Imports (Customs)	68,783	81,911	39,960	40,628	6,832	6,934	7,333
Automotive Products	24,980	32,849	15,728	16,498	2,736	3,093	2,922
Capital Goods	21,516	25,334	12,332	13,693	2,356	2,188	2,523
Consumer Goods	14,017	15,451	7,644	6,207	1,048	978	1,128
Industrial Supplies	7,035	6,949	3,611	3,639	593	582	656

*Preliminary

STATISTICAL SUPPLEMENT

Japanese Economic Indicators

(percentage change from year-earlier period unless otherwise indicated)

	1985	1986	January-June 1986	January-June 1987	April 1987	May 1987	June 1987
Discount Rate (end of period)	5.0%	3.0%	3.5%	2.5%	2.5%	2.5%	2.5%
Outstanding Money Supply	8.4%	8.7%	8.7%	9.4%	9.8%	10.2%	10.0%
Industrial Production	4.6%	-0.4%	0.2%	0.8%	0.3%	-0.8%	3.0%
Manufacturing Operating Rate	1.2%	-4.8%	-3.3%	-2.1%	-1.4%	-2.9%	0.1%
Number of Bankruptcies	-9.7%	-7.1%	-7.5%	-23.1%	-29.4%	-32.2%	-30.2%
Residential Construction Starts	4.1%	10.4%	4.0%	18.6%	19.3%	24.7%	28.1%
Job Openings to Applications (ratio)	0.68	0.62	0.64	0.64	0.64	0.65	0.67
Nominal Wages	3.6%	3.5%	4.1%	2.7%	2.1%	2.4%	3.5%
Labor Productivity	4.2%	2.3%	2.7%*	2.1%*	2.3%	n.a.	n.a.
Wholesale Prices	-1.1%	-9.3%	-8.0%	-7.0%	-6.0%	-5.3%	-4.2%
Consumer Prices	2.0%	0.6%	1.2%	-0.4%	0.1%	0.0%	0.3%
Yen-Based Export Prices	-1.4%	-14.5%	-15.3%	-7.1%	-7.7%	-6.5%	-5.1%
Yen-Based Import Prices	-2.5%	-34.7%	-30.0%	-18.4%	-11.6%	-6.3%	-3.2%

*Through April of each year only.

For Japan's most recent GNP figures, see JEI Report No. 24B, June 26, 1987.

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REPORT

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JAPANESE INCOME DISTRIBUTION

Summary

Economic development cannot be measured solely in terms of the overall size of an economy or the level of per capita income; it is also important to consider how income is distributed among the population. Equitable distribution of income promotes social stability and general welfare. In a free-market economy, though, progress results in winners and losers, and some degree of inequality is bound to exist. Moreover, the higher saving rate of upper income groups tends to concentrate a greater share of assets in their hands over time.

Postwar Japan has achieved a relatively even distribution of income that has encouraged economic growth and helped obliterate prewar class divisions. During the last decade, though, there has been some slippage in the share of the population identifying itself as middle class. This may reflect the widening in wage differentials, complaints that the tax system is unfair to wage earners, the soaring price of land and the impact of the strong yen on regions dependent on manufacturing industries. Government policies that would promote a balanced distribution of income during the economic restructuring that is taking place include measures to limit land prices, promote regional development, investment in social infrastructure and tax reform.

Japan -- the Richest Nation?

Statistically, the Japanese are the richest people on earth. At current exchange rates (Y150=$1.00), Japan's per capita income in 1986 was $18,200, or about 5 percent more than the United States' $17,400. Personal financial assets per person in the two countries were approximately equal at about $30,000 in 1985. In addition, about 70 percent of the Japanese population own land, which is generally very costly. Japan is also the world's largest creditor nation, with $180.4 billion in net foreign assets at the end of 1986.

Still, the appreciation of the yen has produced a sense of insecurity in Japan rather than a feeling of enrichment. One reason is that only about half of the windfall profits from the strong yen and falling oil prices had been passed on to consumers as of the end of 1986, estimates the Economic Planning Agency. Households, though, have felt the yen's impact in the form of rising unemployment and small nominal wage gains. Dissatisfaction with Japan's standard of living despite the country's prosperity has given rise to the expression "A rich country, but a poor people."

This year's government white paper on construction concluded that the population is not receiving the full benefits of Japan's affluence. The nation's social infrastructure lags behind other industrial countries in many areas, including sewage systems, urban parkland and roads (see Table 1). In addition, the Japanese have less leisure time and live in smaller homes, due in large part to the high price of land.

Table 1: International Comparison of Social Infrastructure

Indicator	Japan	Great Britain	West Germany	France	United States
Diffusion ratio of sewer systems (percent)	33% (1983)	97% (1976)	88% (1977)	65% (1975)	72% (1977)
Urban parkland* (square meter per person)	2.1 (1983)	3.4 (1976)	37.4 (1984)	12.2 (1984)	19.2 (1977)
Roads (meters of paved road per car)	13.7 (1982)	18.5 (1982)	18.7 (1982)	31.9 (1982)	33.0 (1981)
Expressways (miles per 10,000 vehicles)	0.5 (1985)	1.0 (1983)	2.0 (1983)	1.6 (1983)	2.7 (1980)

*In New York City for the United States; national capital of other countries.

Source: Ministry of Construction

Trends in Japan's Income Distribution

The sharp disparities in the nation's income and wealth were drastically reduced by wartime destruction and inflation. An estimated 40 percent of

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Japan's capital stock was destroyed during World War II and the rampant inflation from 1945 to 1949 wiped out much of the value of public and private financial assets. In addition, occupation policies, particularly land reform and the dissolution of the powerful conglomerates called zaibatsu, were important.

Rapid economic growth continued to encourage greater equality until the first oil crisis struck in 1973. Until then strong demand for labor reduced virtually all wage differentials -- by age, education, sex, size of employer and occupation -- by big margins. In addition, the migration of workers to urban areas cut the number of small farms, helping to equalize income distribution in the agricultural sector. And the labor shortage reduced the rural-urban income gap by increasing the share of non-farm earnings in farm household income.

Government tax policy also played a role. Japan's progressive personal income tax system has always been one of the steepest in the world and its inheritance taxes are relatively high. This impact on income distribution, though, was balanced by preferential treatment of dividend and interest income. It should also be noted that the trend toward a more even distribution of income was offset to some degree by an apparent rise in the concentration of wealth resulting from the rapid surge in the price of assets. Between 1952 and 1973 the price of urban land rose 58 times, outstripping the 18-fold increase in nominal GNP.

By the onset of the first oil shock, Japan had reached a level of equality in income distribution comparable to that of the United States and other industrial countries. One study, for example, found that income distribution in Japan in 1969 was more equal than in the other six major industrial countries, although less equal than the Scandinavian countries.[1] The ratio of after-tax income of the top fifth of the population to the lowest fifth was 5.2 in Japan compared to 9.5 in the United States. In 1980 the after-tax income of a company president in Japan was on average 7.5 times higher than the starting pay of a new employee, a smaller differential than in many Communist countries.

Japan's egalitarian nature is reflected in its social stability, low crime rate and an infant mortality rate that is the lowest in the world. Moreover, there is no substantial break between wealthy and poor areas in Japanese cities as in most Western cities, and no true slums. The relatively even income distribution played a role in the country's rapid economic growth by boosting demand for consumer durables, permitting mass production, which in turn helped to lower unit costs. In addition, most working families were able to send their children to high school and college, providing industry with an educated labor force. Some analysts, contrasting Japan's social harmony with the class divisions found in some European countries, cite income equality as a factor in Japan's economic growth.

Japan's Middle-Class Consciousness

Government surveys report that the share of people who consider themselves middle class reached a peak of 90.7 percent in 1975 (see Table 2), indicating that the rising standard of living and shrinking income differentials

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[1] Malcolm Sawyer, "Income Distribution in OECD Countries," OECD Economic Outlook, July 1987.

Table 2: Survey on Class Status

A. All respondents

Survey Date	Upper Class	Upper-Middle Class	Middle-Middle Class	Lower-Middle Class	Lower Class	Don't Know
1960	0.4%	3.9%	40.8%	31.5%	13.6%	9.9%
1965	0.6	7.3	50.0	29.2	8.4	4.5
1970	0.6	7.8	56.8	24.9	6.6	3.3
1975	0.6	7.9	60.4	22.4	5.1	3.6
1980	0.6	7.4	54.4	27.5	6.7	3.3
1984	0.5	7.9	54.6	27.1	6.6	3.3
1985	0.5	6.4	53.7	28.4	8.1	2.8
1986	n.a.	6.4	51.8	29.4	n.a.	n.a.

B. 1985 Survey by age bracket

Age	Upper Class	Upper-Middle Class	Middle-Middle Class	Lower-Middle Class	Lower Class	Don't Know
20-24	0.2%	10.9%	54.7%	24.0%	5.1%	5.1%
25-29	0.9	8.1	60.6	23.5	4.5	2.3
30-34	0.1	7.2	58.1	26.9	5.6	2.0
35-39	0.7	5.3	55.3	31.3	5.3	2.2
40-44	0.2	5.8	55.5	28.2	7.8	2.4
45-49	0.4	5.9	52.8	30.0	8.8	2.1
50-54	0.7	6.3	54.8	27.4	9.1	1.7
55-59	0.7	5.5	51.6	30.3	10.4	1.5
60-64	1.0	7.0	49.9	30.1	8.9	3.0
65-69	0.2	4.3	45.2	32.1	14.0	4.1
Over 70	0.5	6.7	45.6	26.5	13.2	7.4

Source: Management and Coordination Agency

have obliterated class distinctions. Bad memories of the prewar class system have made equality an accepted social ideal. The Japanese characterize the middle class, which is as much a cultural category as an economic one, as diligent and frugal workers. The upper class, in contrast, is considered economically unproductive (see Table 3).

The distribution of income followed no definite trend in the 1970s and early 1980s. A calculation of income equality by the EPA, though, indicated it worsened in seven out of the ten years following the first oil shock (see Table 4). The slight trend toward inequality, which has also occurred in the United States during the past decade, is reflected in the falling share of the population calling itself middle class.

Table 3: Attitudes Toward Wealth in Great Britain, United States and Japan

What do the rich do?	Great Britain	United States	Japan
Help economy	25%	39%	12%
Support culture	10	13	5
Exploit others	27	18	12
Live a life of leisure	24	15	69
Other	14	15	2
How do people get rich?			
Inheritance	32%	20%	51%
Ability	9	13	20
Advantages	9	7	2
Hard work	29	43	12
Luck	13	9	9
Other	8	8	5

Source: A Gallup poll reported in The Economist, August 23, 1986, p. 50.

Table 4: Gini Coefficient Measure of Income Distribution, 1971-83

Year	Gross Income	Disposable Income
1971	.179	.167
1972	.180	.167
1973	.179	.167
1974	.188	.178
1975	.188	.180
1976	.186	.175
1977	.184	.171
1978	.188	.175
1979	.180	.166
1980	.183	.168
1981	.187	.172
1982	.187	.170
1983	.188	.170

Note: An increase in the Gini coefficient indicates a less even income distribution.

Source: Economic Planning Agency, Kokumin Seikatsu Hakusho, 1984, pp. 25-27.

One reason for the recent trend is the widening of income differentials since the first oil shock (see Table 5). The income gap between nonfarm and farm workers has increased in favor of the latter, while government employees have gained relative to workers in the private sector. In addition, executive income has outpaced other wages. In the private sector, the wage gap between industries, male and female workers, large and small enterprises, and white collar and production workers has been widening since the last half of the 1970s.[2]

Table 5: Trends in Income Differentials

(100 = national average for nonfarm households)

Year	Blue-Collar Workers	White-Collar Workers	Government Workers	Executives	Farmers
1960	78.1	123.2	106.6	265.6	--
1964	84.3	121.7	108.4	232.3	106.4
1968	87.0	110.8	113.7	187.0	120.6
1972	81.1	113.9	110.5	193.8	118.2
1976	79.4	107.1	118.3	195.8	124.8
1979	81.1	104.8	114.7	201.8	123.3
1982	82.5	109.0	116.2	205.5	123.1

Source: Masako Ozawa, "The Dawn of the Stratified Consumption Age," Economic Eye, September 1985, p. 21.

Not surprisingly, the disparity between farm and nonfarm net financial assets increased at a faster pace than the income gap (see Table 6). In the Tokyo area, in particular, wage earners hold fewer financial assets than farmers. The gap reflects the accumulation of farm households' higher incomes, as well as the large sums earned by selling off parcels of farmland for residential use.

Table 6: Trends in Net Financial Asset Differentials

(100 = national average for nonfarm households)

Year	All of Japan		Tokyo Area	
	Nonfarmers	Farmers	Wage and Salary Earners	Farmers
1964	100.0	101.6	121.1	--
1968	100.0	116.4	94.3	166.1
1972	100.0	142.7	86.4	231.4
1976	100.0	170.4	94.1	277.3
1979	100.0	203.3	76.1	306.0
1982	100.0	201.3	90.8	306.3

Source: Masako Ozawa, "The Dawn of the Stratified Consumption Age," Economic Eye, September 1985, p. 21.

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[2] Masako Ozawa, "Japan's New Class Society," LTCB Research, September 1984.

Developments during the past few years have heightened concern over this issue. A January 1987 poll, for example, reported that 60 percent said the gap between the rich and poor was widening. The erosion of middle class identity may reflect dissatisfaction with the slow growth of real disposable income in recent years. Although labor productivity rose by more than 3 percent a year from 1975 through 1985 EPA reports show that real wage hikes averaged only 1.5 percent a year. In contrast, the average inflation-adjusted wage hike of 6.3 percent from 1970 to 1975 was substantially higher than productivity gains. The tax system is another source of dissatisfaction. The Management and Coordination Agency reported that 88.5 percent of wage earners polled last month said the tax system was unfair. Ministry of Finance data show 86 percent of salaried employees paid income tax in 1985, compared to 41 percent of the self-employed labor force and 20 percent of the farmers.

The appreciation of the yen since February 1985 has also had an uneven impact on Japan's economy. The decline of smokestack industries, such as steel and shipbuilding, has depressed some regions of the country. Unemployment rates of 4.5 percent in Hokkaido and 4.1 percent in Kyushu in May were well above the national average of 3 percent. In contrast, Tokyo and other cities that depend more on service-sector industries have escaped the brunt of the high yen.

One of the causes of the growing sense of deprivation in the middle class is the soaring price of land that threatens to divide Japan into two classes -- those who own land and those who never will. Driven by speculation, prices in residential and business districts in central Tokyo rose 76 percent last year, and the price spiral is now spreading to the suburbs and other major cities. The surge has created instant millionaires while making it more difficult for families to purchase homes. The average price of a home is more than six times annual income in Tokyo, or more than double the ratio in New York and Los Angeles.

Conclusion

According to the 1984 Family Income and Expenditure Survey, the saving rate of families in the top fifth income bracket was almost 50 percent higher than those in the bottom fifth. A larger share of income for the wealthy, therefore, would boost saving and discourage consumption, frustrating the economy's shift to domestic demand-oriented growth. It could also result in labor problems and diminish labor's incentive to work.

Tokyo is under pressure from abroad to abandon some of the policies that have promoted equality. Its agricultural program has boosted rural income while imposing high costs on both consumers and taxpayers. The producer price of rice in Japan, for example, is at least six or seven times the international level. In addition, measures to protect small but inefficient retailers have maintained employment in that sector. The 1986 Maekawa report recognized the inefficiency of the distribution system in calling for the "streamlining of distribution mechanisms" as part of its plan to restructure Japan's economy.

Although these reforms could exacerbate discrepancies in income, there are several policies the government could pursue to encourage an even distribution of income. Perhaps the most important is to control soaring land costs by boosting the tax on farmland in urban areas. The Ministry of Agriculture, Forestry and Fisheries reports there are 4,300 farming households occupying a total area of 16 million square meters (3,952 acres) within the city limits of Tokyo. Although the differential varies between areas, the tax on farmland is generally only 1 to 2 percent of the tax on residential land so long as the owner intends to continue farming for at least 10 years. Higher taxes would encourage farmers to sell the land and would expand the supply of residential real estate. The National Land Agency and the Construction Ministry are currently studying possible changes in the land tax system.

Other policies include investment in social infrastructure and regional development to aid areas hard-hit by the strong yen. In addition, tax reform that increases the share of indirect taxes would benefit wage earners, who are falling behind farm households. And, finally, measures to boost competition and lower prices would benefit Japanese consumers. Taking account of the differences in consumer prices in Japan and the United States, the Organization for Economic Cooperation and Development estimates that per capita income in Japan was still about 30 percent below this country's level in 1986.

For further information, contact Randall S. Jones.

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The views expressed in this report are those of the author and do not necessarily represent those of the Japan Economic Institute.

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Pages: 1-10

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IN THIS ISUE:

Economic White Paper:
Changes Needed To Boost Living Standard 1

Foreign Minister Kuranari Visits South Asia 3

DOD Releases Final Electro-Optic Report 4

MOSS Talks On Automotive Parts End 6

Notes: Exchange Rate Update;
World Bank Borrowing;
Top Japanese Defense Contractors 8

Economic White Paper: Changes Needed To Boost Living Standard

A report issued by Japan's Economic Planning Agency August 18 urged a series of reforms to promote harmonious relations with the country's trading partners and at the same time improve the standard of living. The government's annual economic report proposed better market access, agricultural reforms, a reduced work week and increased investment in social infrastructure, such as parks and roads. Moreover, the EPA said a more efficient distribution system is necessary to reduce consumer prices and boost domestic demand.

The 4.1 percent real growth in domestic demand in FY 1986, the fastest in seven years, reflects the progress that has been made to restructure the economy to domestic demand-led growth (see Table). The negative impact of the external sector, however, slowed growth to an inflation-adjusted 2.6 percent, the lowest since fiscal 1974. The white paper reported that the economy, which peaked in June 1985 before being hit by the high yen, began to recover in early 1987.

Components of Japan's Real Economic Growth

	Total Rate	Domestic Component	External Component	Current Account Surplus*
FY 1970	7.6%	9.0%	-1.4%	$2.3
FY 1971	5.0	4.1	0.9	6.3
FY 1972	9.2	10.6	-1.4	6.2
FY 1973	4.5	7.5	-3.0	-3.9
FY 1974	-0.4	-2.9	2.5	-2.3
FY 1975	3.9	2.4	1.4	0.1
FY 1976	4.6	3.8	0.8	4.7
FY 1977	5.3	4.5	0.8	14.0
FY 1978	5.2	7.1	-1.9	11.9
FY 1979	5.3	5.1	0.2	-13.9
FY 1980	4.0	1.0	3.0	-7.0
FY 1981	3.3	2.1	1.2	5.9
FY 1982	3.2	2.7	0.5	9.1
FY 1983	3.7	2.1	1.5	24.2
FY 1984	5.1	3.8	1.2	37.0
FY 1985	4.3	3.6	0.7	55.0
FY 1986	2.6	4.1	-1.5	94.1

*In billions of dollars.

Source: Economic Planning Agency

Declining employment in the manufacturing sector boosted the unemployment rate to a record 3 percent in FY 1986 and the study warned that the surge in direct foreign investment by Japanese firms threatens to further increase it. Another major problem -- the rise in land prices -- is blamed in part on the large number of foreign banks and securities firms opening offices in Tokyo as a result of financial market opening steps. Although it is only 4 percent as large as the United States in terms of geographic size, the report said Japan's land area is valued at $6.9 trillion, compared to this country's $3.3 trillion. The report called on government authorities to intervene in real estate transactions to slow the rise in land prices.

The strong yen helped boost import volume by 14.1 percent in FY 1986, while exports fell 1.3 percent. Particularly important was the sharp 34.7 percent rise in the value of manufactured imports that brought its share to a record 44.1 percent of purchases from abroad. Still, the EPA noted that the $94.1 billion current account surplus recorded in FY 1986 was equivalent to 4.5 percent of Japan's gross national product, the highest figure recorded by an industrial country in the postwar era. Japan's surplus, however, appears to have peaked in early 1987; a larger deficit in services in the April-June 1987 quarter reduced the current account surplus below its year-earlier level for the first time in 18 quarters (see JEI Report No. 30B, August 7, 1987).

EPA director general Tetsuo Kondo also announced that his agency will issue a progress report by mid-October on the implementation of the Maekawa Report. The commission's original study in April 1986 was supplemented by a follow-up report last April (see JEI Report No. 17B, May 1, 1987).

Randall S. Jones

Foreign Minister Kuranari Visits South Asia

On August 16 Japan's Foreign Minister Tadashi Kuranari completed an eight-day tour of India, Sri Lanka and Bangladesh. The visit, the first since former foreign minister Iichiro Hatoyama's in 1977, was an effort to promote economic and political relations between Japan and South Asia. Not surprisingly, the discussions focused on the economic needs of the three countries, especially the possibility of expanded economic assistance from Tokyo.

Japan has been generous to the region (see Table 1). In 1985, for example, Bangladesh and Sri Lanka were among the top ten recipients of Tokyo's official development assistance, ranking seventh and ninth, respectively. (Pakistan also receives a sizable share of Japanese aid -- some $93 million in 1985 -- putting it in eighth place.) Approximately 10 percent of total ODA went to South Asia -- less than Southeast Asia or Northeast Asia's shares, and roughly equal to the amount received by non-Asian regions.

Table 1: Japan's Aid to India, Sri Lanka and Bangladesh, 1981-85

(in millions of dollars)

	1981	1982	1983	1984	1985
India					
Grants	$20.8	$17.0	$13.4	$17.6	$14.1
Loans	-16.8	24.1	116.1	4.0	7.8
Total	4.0	41.1	129.5	21.6	21.9
Sri Lanka					
Grants	31.6	27.8	35.3	35.2	41.1
Loans	17.4	33.8	37.8	28.5	42.7
Total	49.1	61.6	73.1	63.8	83.7
Bangladesh					
Grants	55.1	48.7	42.8	48.2	62.2
Loans	89.9	167.1	61.4	75.1	59.3
Total	145.0	215.8	104.2	123.3	121.5

Source: Ministry of Foreign Affairs

Mr. Kuranari pledged a Y68.5 billion ($456.7 million at Y150=$1.00) loan to India, the largest amount Japan has ever lent to that country. Discussions were also held about the possibility of a Y19.3 billion ($128.7 million) package to Sri Lanka as well as an emergency aid package to relieve victims of recent floods in Bangladesh.

South Asian leaders also urged Tokyo to correct Japan's persistent trade surplus with the region (see Table 2) by lowering tariffs on imports of tea and other agricultural products. Officials are also interested in more direct investment, although Mr. Kuranari stressed that an improvement in the investment climate would have to come first. He referred specifically to the upheaval surrounding the Tamil separatist movement in Sri Lanka, noting approvingly the recent India-Sri Lanka accord that seeks to end ethnic hostilities.

Table 2: Japan's Trade With India, Sri Lanka and Bangladesh, 1982-86

(in millions of dollars)

	1982	1983	1984	1985	1986
India					
Exports	$1,408.3	$1,430.7	$1,167.8	$1,596.4	$2,099.4
Imports	1,122.1	1,130.8	1,132.4	1,188.6	1,297.0
Trade Balance	286.2	299.9	35.4	407.8	802.4
Sri Lanka					
Exports	226.3	290.1	254.1	270.7	288.7
Imports	70.9	69.0	79.7	78.6	89.3
Trade Balance	155.4	221.1	174.4	192.1	199.4
Bangladesh					
Exports	210.7	192.0	243.5	311.1	445.2
Imports	56.2	64.7	78.3	84.4	82.7
Trade Balance	154.5	127.3	165.2	226.7	362.5

Source: Japan Tariff Association, The Summary Report: Trade of Japan

The foreign minister pledged to strengthen Tokyo's contact with the South Asian Association for Regional Cooperation, a seven-member group comprised of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan and the Maldives. Although Japan has readily acknowledged that its leadership role in Asia lies in promoting economic stability and meeting development goals, the primary focus has in the past been aimed at those countries closest to home: Northeast Asian countries and members of the Association of Southeast Asian Nations. Nonetheless, Mr. Kuranari's visit to South Asia was a signal that Tokyo has no intention of leaving this part of the continent out of the picture.

Eileen Marie Doherty

DOD Releases Final Electro-Optic Report

The Department of Defense recently released its final report on electrooptics and millimeter wave technology in Japan, concluding that "a significant number of Japanese industries have ongoing R&D programs in [these fields] that are of interest to, and offer potential for, DOD programs." The report categorized these advances in four areas: information processing (fiber optics, television displays, communications and computers); basic microelectronics (gallium arsenide devices and optoelectronics); space applications (ring laser and fiber optic gyros); and aeronautical applications (radar altimeters, accelerometers, and various display and control technologies). The task force completing the report said that Japanese firms are within one or two years of commercializing magnetic optical disk technology for mass storage applications and are "comparable to or ahead of U.S. work" on gallium arsenide devices. Researchers in Japan are said to be taking the lead in developing technologies for various cathode-ray tubes, plasma display panels and liquid crystal displays.

The report follows a shorter assessment released in May 1985 that spurred DOD to investigate the capabilities of 13 Japanese facilities in 24 technologies for the current study. The DOD team was headed by Dr. John MacCallum and included representatives of the Naval Research Laboratory, the Army Night Vision Electro-Optics Center, the Defense Advanced Research Project Agency, the Air Force Wright Aeronautical Laboratory and B-K Dynamics, Inc.

One of the significant themes in both reports is the ability of Japanese companies to commercialize new technologies more rapidly than is customary in the United States. Japanese firms, the task force concluded, are driven primarily by commercial considerations in their R&D, thus explaining their ability to introduce products more rapidly in many cases than their competitors.

On a policy level, the commercial/competitive pressures in Japan also imply a need for extensive government-to-government cooperation in order to facilitate technology transfers to the United States for defense work. While the MacCallum task force recognizes that government interaction will be needed to overcome reservations about the competitive implications of such transfers, questions remain regarding DOD's policy toward foreign-sourced inputs.

A study completed by the Defense Science Board earlier this year on semiconductors suggested a need for reducing this country's dependence on foreign suppliers (see JEI Report No. 7B, February 20, 1987). While that report did not represent DOD policy, it appears that a number of officials share these perceptions. This has encouraged doubts within the Japanese business community about U.S. intentions to acquire Japanese technologies. One might argue that since the most recent report was concluded under the auspices of DOD's research and advanced technology office it must reflect department attitudes. At the very least, it is hoped that the report will help facilitate transfers by identifying areas of interest and providing American industry with more in-depth information concerning Japanese companies and capabilities.

DOD is involved in another study of Japanese capabilities, this one on production and manufacturing techniques. Dr. Clinton W. Kelly, a member of DARPA's technology assessment team for manufacturing technology, who briefed the Senate Armed Services subcommittee on defense, industry and technology on July 23, said that "the Japanese are able to rapidly transition advanced manufacturing technology into the production environment; Japanese companies are, by nature, highly efficient just to survive a brutal domestic competitive environment; and obsession with product quality is the cornerstone for long-term market share and economic growth." Dr. Kelly summarily declared that "Japan's competitors are being outhustled," noting that a number of factors -- not simply hard-to-penetrate markets -- explain this phenomenon.

Following a tour of Japanese facilities in January 1987, the technology team identified the following elements as critical to Japan's success:

- Rapid commercialization - Severe competitive pressures, fostered in part by government policies, force Japanese companies to introduce new products into the market or risk failure. Sophisticated design approaches calling for automated assembly, design for "manufacturability," or concurrent design accelerate product development. Finally, Japanese manufacturers have mastered the KISS principle -- "keep it simple, stupid." Components are kept to a minimum and the design is as simple as possible.

- Nature of manufacturing - Manufacturing processes are viewed as a strategic factor contributing to Japan's competitive advantage. They account for as much as 40 percent of a company's R&D budget compared to about 10 percent for American companies (see Table). Interestingly, the team has concluded tentatively that automation -- while extensive -- is used primarily for simple tasks, freeing human resources for the more complicated aspects of the manufacturing process. This differs somewhat from the popular concept of totally automated Japanese factories with endless rows of robots performing a range of highly complex tasks.

Manufacturing Comparisons

Category	Japan	United States
Indirect vs. direct labor	4:1	8:1
Nonconformance/rework (electronics industry)	0.5-1%	8-10%
Working stock/inventory on hand	Up to 2 months	Up to 9 months
Robots utilized (welding, assembly, materials handling)	40,000+	10,000+
Time between orders and shipments (machine tool industry)	1-2 months	5-6 months
Personnel turnover (percent of enterprise population)	1%	10-12%
Average work hours per employee year	2,152	1,898
Average age of plant and equipment (total industrial base)	10 years	17 years
Private investment in plant and equipment as share of GNP	17%	10.2%
Electronics sales to other country	$23.9 billion	$3.5 billion
Number of manufacturing jobs (1986)	15 million	20 million

Source: Department of Defense, Technology Assessment Team for Manufacturing Technology

- Human resources - Characteristics constituting "pillars of the Japanese industrial community" include a "significant commitment to company-sponsored education and training, and company philosophy."

- Quality control - The emphasis on assuring quality in all phases of the manufacturing process appears throughout research, sales, planning, training and production facilities. This contrasts with the American attitude of assigning responsibility for assuring a product's quality to a single department. The Japanese, Dr. Kelly concluded, "sincerely believe that their manufacturing excellence derives from quality."

Michael W. Chinworth

MOSS Talks On Automotive Parts End

Duplicating the success of the inaugural MOSS (market-oriented, sector-selective) negotiations on telecommunications equipment and services, medical equipment and pharmaceuticals, electronics products, and wood and paper products would have been tough no matter what products were targeted for the second round of in-depth talks. But the selection of automotive parts stacked the odds against a repeat performance. As Under Secretary of Commerce for International Trade Bruce Smart readily acknowledged during the initial August 1986 meeting on automotive parts, the close ties between Japanese motor vehicle manufacturers and their traditional suppliers, not formal trade barriers, are the main reason American companies have trouble selling production components to Japanese car and truck plants at home and abroad and gaining access to the worldwide aftermarket for Japanese vehicles.

Even though Commerce officials could put check marks next to each of the five items on their agenda for the parts discussions by the time the talks ended August 18, they would be the first to concede that the results of the negotiations did not have the domestic political punch of the 1985 MOSS sessions. Mr. Smart told a Tokyo press briefing that the main achievement of his three meetings with Makoto Kuroda, International Trade and Industry vice minister for international affairs, and seven rounds of working-level discussions was the new awareness of Japan's motor vehicle makers and U.S. parts producers alike that they must change the way they do business. Car and truck builders recognize that they can no longer politically afford to source the vast majority of their parts requirements from traditional suppliers, the chief American negotiator said, while U.S. companies have learned that they must be able to equal their Japanese competitors in terms of quality, price and delivery to win contracts from Japan's vehicle industry.

The most tangible result of the year-long talks was the establishment of a system to monitor purchases of American-made parts, accessories and materials by Japanese automotive manufacturers and their U.S. subsidiaries over the five-year period starting in April 1987. This was one of Washington's key objectives for the negotiations, in part because the two countries have never agreed on the value of U.S. parts bought by Japan's motor vehicle industry but also because domestic suppliers of both original equipment and replacement parts believe that the publication of data on U.S. sourcing will compel Japanese makers to increase their purchases from American vendors.

But U.S. trade negotiators did not get everything the domestic industry wanted in terms of a monitoring system. Instead of quarterly reports that break out purchases from the growing list of Japanese parts producers operating in this country (see JEI Report No. 11A, March 20, 1987), the Japan Automobile Manufacturers Association will only release semiannual figures that combine purchases from the "transplants" with procurement from companies headquartered in the United States. A single number, American suppliers worry, could easily hide a continuing low volume of purchases from U.S. vendors even as the total figure rises from FY 1986's $2.5 billion level (see Table).

In addition to the monitoring system, JAMA will keep track of the number of "purchasing relationships" Japanese car and truck builders or their American affiliates establish with U.S. parts suppliers each year through April 1991. The basis of comparison will be the early April 1987 total of 807. The trade association will also periodically update the list of specific purchasing department contacts that has already been distributed to U.S. parts companies through the Commerce Department.

Purchases of American-Made Parts by Japanese Automotive Makers and Their U.S. Subsidiaries, FY 1985 and FY 1986

(in thousands of dollars*)

	FY 1985	FY 1986
Engine Parts	$205,830	$238,507
Chassis and Drivetrain Parts	187,852	205,542
Body Parts	396,367	775,955
Electrical and Electronic Parts	684,518	916,230
Accessories	76,046	106,542
Materials	175,883	246,659
Total	1,726,496	2,489,435

*Japanese imports were converted into dollars at the following average fiscal year exchange rates: FY 1985, Y221 and FY 1986, Y160.

Source: Japan Automobile Manufacturers Association

For its part, the Japanese government said it would continue to cooperate with industry in staging seminars and trade shows and to work with Washington in resolving problems that crop up in the automotive parts trade. Touching on a related matter, the Japanese side noted in the final report on the negotiations that the government had already taken steps to insure that the Ministry of Transportation's periodic vehicle inspection program does not discriminate against cars and trucks equipped with foreign parts.

Tokyo and Washington said they would hold follow-up meetings on parts issues, but this pledge did nothing to pacify leaders of the 26-member congressional task force on automotive parts, top United Auto Workers union officials and U.S. industry executives angry that American negotiators had not extracted specific commitments from Japanese motor vehicle manufacturers to expand their purchases of American-made parts. However politically attractive such commitments might be, they were never on Commerce's agenda for the talks because of administration opposition to government-enforced purchasing quotas or goals. But even without specific commitments, American suppliers will win more Japanese business; the run-up in the yen's value and the expanding ranks of domestic makers able to meet Japanese requirements guarantee that outcome.

Susan MacKnight

Notes

Exchange Rate Update - The yen rose for the sixth consecutive trading session on August 24, closing at Y142.65=$1.00, the highest since June 10. The yen has risen 6.8 percent against the dollar since the August 14 announcement of a larger-than-expected U.S. June trade deficit of $15.7 billion. Traders also attributed the dollar's weakness to the downward revision in the second quarter U.S. gross national product and Japanese Finance Minister Kiichi Miyazawa's comments that the dollar's latest fall would not seriously affect Japan's economy.

Many analysts were surprised by the small scale of central bank intervention in exchange markets during the week of August 14-21. There was speculation that the currency ranges the major countries had agreed to defend in the February meeting in Paris were no longer viable in light of the failure of the U.S. trade deficit to show much signs of improvement. On August 24, though, the Bank of Japan purchased an estimated $200 to $400 million to slow the fall of the dollar. In addition, central bank sources said they will continue to maintain an easy monetary policy, which helps stabilize the yen. In July Japan's money supply (M_2+CDs) grew at a double-digit rate from year-earlier levels for the third consecutive month.

World Bank Borrowing - As part of Tokyo's three-year plan to recycle $20 billion to the developing countries (see JEI Report No. 21B, June 5, 1987), a syndicate of 12 nationwide commercial banks led by Fuji Bank, Ltd. agreed August 10 to lend the World Bank Y20 billion ($133.3 million at Y150=$1.00). A week later the bank arranged Y15 billion ($100 million) in financing from a group of 49 regional banks led by the Bank of Yokohama, Ltd. Both loans are for seven years and carry an interest rate of 5.2 percent. The World Bank has not borrowed from Japanese banks for nearly three years.

Top Japanese Defense Contractors - According to the Japan Defense Agency, Mitsubishi Heavy Industries, Ltd. solidified its position as the nation's top defense contractor in FY 1986, garnering Y291.4 billion ($1.9 billion at Y150=$1.00) or 24.3 percent of JDA's total Y1,199.4 billion ($8 billion) procurement (see Table). Altogether, the top ten contractors won Y786.8 billion ($5.3 billion) in contracts, virtually unchanged at 65.6 percent of total awards. Moreover, with the exception of Mitsubishi Corp. replacing Sumitomo Heavy Industries, Ltd. on the list, the top ten contractors stayed the same.

Aircraft purchases and maintenance costs accounted for 26.9 percent of JDA's equipment outlays in FY 1986. This share is expected to remain about the same during the current fiscal year when procurement is anticipated to reach Y1,326 billion ($8.8 billion).

MHI's dominant role in defense production partly reflects the fact that it is the prime contractor for JDA's F-15. It is also an indication of the success of the company's long-term marketing strategy, which in recent years has emphasized defense sales. This focus, coupled with the significant role of aircraft procurement in JDA's overall budget, explains MHI's attachment to the proposed plan to develop domestically a new generation of fighter support aircraft. A decision on the FSX program could be announced as early as September, although with sentiment in both Japan and the United States running so strongly, another postponement might be inevitable. JDA is attempting to find a solution that will satisfy domestic manufacturers and U.S. government officials, who would like Tokyo to import an American-made plane, in part to alleviate trade tensions.

Top Japanese Defense Contractors, FY 1985 and FY 1986

(in billions of yen)

FY 1985	Amount	Percent of Total
1. Mitsubishi Heavy Industries, Ltd.	Y242.0	21.8%
2. Kawasaki Heavy Industries, Ltd.	123.4	10.7
3. Mitsubishi Electric Corp.	104.7	9.2
4. Toshiba Corp.	73.3	6.4
5. Ishikawajima-Harima Heavy Industries Co., Ltd.	69.4	6.0
6. NEC Corp.	40.5	3.5
7. Japan Steel Works, Ltd.	28.6	2.5
8. Sumitomo Heavy Industries, Ltd.	22.4	1.9
9. Hitachi Zosen Corp.	21.6	1.9
10. Fuji Heavy Industries, Ltd.	17.7	1.5
Total	743.6	65.2
FY 1986		
1. Mitsubishi Heavy Industries, Ltd.	291.4	24.3
2. Kawasaki Heavy Industries, Ltd.	144.8	12.1
3. Mitsubishi Electric Corp.	81.3	6.8
4. Ishikawajima-Harima Heavy Industries Co., Ltd.	77.8	6.5
5. Toshiba Corp.	67.4	5.6
6. NEC Corp.	48.5	4.0
7. Japan Steel Works, Ltd.	22.2	1.9
8. Fuji Heavy Industries, Ltd.	18.2	1.5
9. Hitachi Zosen Corp.	18.2	1.5
10. Mitsubishi Corp.	17.0	1.4
Total	786.8	65.6

Sources: Jieitai Sobi Nenkan, 1986 and 1987; Wing, June 3, 1987.

* * * * * *

The views expressed in this report are those of the authors and do not necessarily represent those of the Japan Economic Institue.

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Japan Economic Institute 1000 Connecticut Avenue, N.W., Washington, D.C. 20036 202·296·5633

Table of Contents

Table 23: Japan's Global Balance of Payments, 1982-1986 14
Table 24: Japan's Balance of Payments with the United States, 1982-1986 ... 15
Table 25: Japan's Exports and Imports in Dollar Terms, 1982-1986 16
Table 26: Japan's Exports and Imports in Yen Terms, 1982-1986 16
Table 27: Japan's Export and Import Quantum (Volume) Indexes, 1982-1986 ... 17
Table 28: Japan's Export and Import Yen-Based Price Indexes, 1982-1986 17
Table 29: Japan's Exports by Major Market, 1982-1986 18
Table 30: Japan's Imports by Major Supplier, 1982-1986 19
Table 31: Japan's Trade Balance with Major Trading Partners, 1982-1986 20
Table 32: Japan's Exports by Commodity, 1982-1986 21
Table 33: Japan's Imports by Commodity, 1982-1986 24
Table 34: Japan's Dollar-Based Trade with the United States, 1982-1986 26
Table 35: Japan's Yen-Based Trade with the United States, 1982-1986 26
Table 36: Yen-Dollar Exchange Rate Used to Convert Customs Clearance Trade Data, 1982-1986 27
Table 37: Yen-Dollar Exchange Rate on Tokyo Foreign Exchange Market, 1982-1986 27
Table 38: Japan's Foreign Direct Investment by Country, FY 1982-FY 1986 ... 28
Table 39: Japan's Foreign Direct Investment by Industry, FY 1982-FY 1986 .. 28
Table 40: U.S. International Transactions, 1982-1986 29
Table 41: U.S. Current Account Balance with Japan, 1982-1986 30
Table 42: U.S. Exports and Imports, 1982-1986 31
Table 43: U.S. Exports by Major Market, 1982-1986 32
Table 44: U.S. Imports by Major Supplier, 1982-1986 33
Table 45: U.S. Trade Balance with Major Trading Partners, 1982-1986 34
Table 46: U.S. Exports by Commodity, 1982-1986 35
Table 47: U.S. Imports by Commodity, 1982-1986 37
Table 48: U.S. Trade with Japan, 1982-1986 39
Table 49: U.S. Exports to Japan by Commodity, 1982-1986 40
Table 50: U.S. Imports from Japan by Commodity, 1982-1986 42
Table 51: U.S. Exports to Japan by End-Use Classification, 1985 and 1986 44
Table 52: U.S. Imports from Japan by End-Use Classification, 1985 and 1986 47
Table 53: U.S. Direct Investment Position Abroad, Year-End 1982-1986 52
Table 54: U.S. Direct Investment Position in Japan, Year-End 1982-1986 52
Table 55: Foreign Direct Investment Position in the United States, Year-End 1982-1986 53
Table 56: Japan's Foreign Direct Investment Position in the United States, Year-End 1982-1986 53

For comparable data going back to 1974 consult the Japan Economic Institute's annual Yearbook of U.S.-Japan Economic Relations.

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Table 23: Japan's Global Balance of Payments, 1982-1986

(in millions of dollars, IMF value basis, seasonally unadjusted)

		Trade Balance	Exports	Imports	Services	Transfers	Current Account Balance	Long-Term Capital	Basic Balance	Short-Term Capital	Errors and Omissions	Overall Balance	Gold and Foreign Exchange Reserves*
1982		$18,079	$137,663	$119,584	$-9,848	$-1,381	$6,850	$-14,969	$-8,119	$-1,579	$4,727	$-4,971	$23,262
1983		31,454	145,468	114,014	-9,106	-1,549	20,799	-17,700	3,099	23	2,055	5,177	24,496
1984		44,257	168,290	124,033	-7,747	-1,507	35,003	-49,651	-14,648	-4,295	3,743	-15,200	26,313
1985		55,986	174,015	118,029	-5,165	-1,652	49,169	-64,542	-15,373	-936	3,991	-12,318	26,510
1986		92,827	205,591	112,764	-4,932	-2,050	85,845	-131,461	-45,616	-1,609	2,458	-44,767	42,239
1985	January	1,363	10,970	9,607	-479	-93	791	-3,239	-2,448	-610	690	-2,368	26,539
	February	3,275	12,779	9,504	-660	-83	2,532	-2,116	416	-605	332	143	26,244
	March	4,299	14,415	10,116	-426	-378	3,495	-5,000	-1,505	638	678	-189	26,538
	April	4,180	14,748	10,568	25	-101	4,104	-5,116	-1,012	-528	418	-1,122	26,841
	May	4,262	14,198	9,936	-594	-98	3,570	-4,255	-685	1,077	620	1,012	27,328
	June	5,751	14,293	8,542	-42	-121	5,588	-7,795	-2,207	-394	791	-1,810	27,569
	July	5,455	15,149	9,694	-454	-84	4,917	-8,770	-3,853	635	-156	-3,374	28,103
	August	4,387	13,707	9,320	-920	-68	3,399	-6,478	-3,079	219	979	-1,881	28,452
	September	5,235	14,613	9,378	-267	-189	4,779	-3,061	1,718	63	-1,277	504	27,523
	October	5,394	16,005	10,611	-508	-177	4,709	-7,082	-2,373	-1,018	785	-2,606	26,372
	November	5,357	15,340	9,983	-759	-111	4,487	-5,562	-1,075	-687	1,472	-290	26,303
	December	7,028	17,798	10,770	-81	-149	6,798	-6,068	730	274	-1,341	-337	26,510
1986	January	2,360	12,614	10,254	-285	-145	1,930	-7,241	-5,311	-1,094	1,253	-5,152	26,961
	February	4,770	14,889	10,119	-693	-185	3,892	-8,061	-4,169	1,601	1,269	-1,299	27,582
	March	7,422	17,310	9,888	-167	-409	6,846	-3,688	3,158	-1,623	-779	756	27,917
	April	7,742	17,485	9,743	215	-177	7,780	-12,122	-4,342	-637	3,644	-1,335	31,113
	May	8,340	17,633	9,293	-561	-150	7,629	-9,916	-2,287	1,085	340	-862	32,475
	June	7,840	17,152	9,312	-28	-122	7,690	-6,844	846	-1,917	-1,359	-2,430	33,905
	July	8,759	18,493	9,734	-499	-175	8,085	-11,812	-3,727	1,401	1,697	-629	38,330
	August	8,178	16,627	8,449	-934	-158	7,036	-13,043	-5,957	-1,620	2,105	-5,472	41,214
	September	9,856	18,739	8,883	-489	-125	9,242	-13,555	-4,313	1,726	-1,285	-3,872	41,456
	October	8,817	18,861	10,044	-454	-112	8,251	-16,248	-7,997	98	-182	-8,081	41,676
	November	8,548	16,591	8,043	-242	-83	8,223	-13,594	-5,371	201	-4,163	-9,333	41,980
	December	10,195	19,197	9,002	-795	-209	9,191	-15,337	-6,146	-830	-82	-7,058	42,239

*End of period.

Note: For capital transactions, credits (+) indicate net inflows and debits (-) indicate net outflows.

Source: Bank of Japan and Ministry of Finance

Table 24: Japan's Balance of Payments with the United States, 1982-1986

(in millions of dollars, IMF value basis)

	1982	1983	1984	1985	1986
Merchandise Trade Balance	$15,131	$21,211	$36,704	$42,988	$54,919
Exports	36,477	43,057	60,479	65,617	80,385
Imports	21,346	21,846	23,775	22,629	25,466
Services Balance	-677	-1,884	-1,495	-1,012	-585
Transportation	-733	-573	-37	110	243
Travel	-1,274	-1,319	-1,369	-1,329	-2,012
Investment Income	2,140	1,280	1,379	2,268	3,231
Other	-810	-1,272	-1,468	-2,061	-2,047
Official	1,148	1,314	1,397	1,495	1,931
Private	-1,958	-2,586	-2,865	-3,556	-3,978
Unilateral Transfers Balance	-120	-176	-191	-249	-552
Official	-11	-18	-44	-27	-92
Private	-109	-158	-147	-222	-460
Current Account Balance	14,334	19,151	35,018	41,727	53,782
Long-Term Capital (net)	-1,700	-5,541	-14,814	-33,163	-65,650
Direct Investments (net)	-1,423	-1,041	-3,180	-2,043	-7,774
Trade Credits (net)	-788	-190	-195	-587	-334
Loans (net)	-243	-329	-477	-716	-690
Stocks (net)	813	-3,803	-10,591	-29,874	-55,944
Bonds (net)	435	-140			
Other (net)	-494	-38	-371	57	-908
Basic Balance	12,634	13,610	20,204	8,564	-11,868

Note: For long-term capital transactions, credits (+) indicate net inflows and debits (-) indicate net outflows.

Source: Bank of Japan

Table 25: Japan's Exports and Imports in Dollar Terms, 1982-1986

(in millions of dollars, customs clearance basis, seasonally unadjusted)

		Exports (f.o.b.)	Change Over Year-Earlier Period	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982		$138,831	-8.7%	$131,931	-7.9%	$6,900
1983		146,928	5.8	126,393	-4.2	20,534
1984		170,114	15.8	136,503	8.0	33,611
1985		175,638	3.3	129,539	-5.1	46,099
1986		209,151	19.1	126,408	-2.4	82,743
1985	January	11,057	8.4	10,596	-4.0	462
	February	12,923	-2.4	10,584	-4.3	2,340
	March	14,523	-6.7	11,333	-8.4	3,189
	April	14,871	2.9	11,613	2.4	3,259
	May	14,432	1.0	11,057	-11.1	3,375
	June	14,444	-2.1	9,424	-12.3	5,020
	July	15,291	3.3	10,693	-8.1	4,599
	August	13,860	4.1	10,370	-15.0	3,491
	September	14,758	0.8	10,177	0.3	4,581
	October	16,033	7.5	11,678	3.1	4,355
	November	15,488	10.8	10,704	-1.6	4,784
	December	17,957	12.5	11,312	-0.1	6,646
1986	January	12,789	15.7	10,905	2.9	1,884
	February	15,072	16.6	11,133	5.2	3,939
	March	17,639	21.5	10,967	-3.2	6,672
	April	17,758	19.4	10,908	-6.1	6,850
	May	17,917	24.1	10,384	-6.1	7,533
	June	17,492	21.1	10,133	7.5	7,359
	July	18,887	23.5	10,694	0.0	8,193
	August	16,830	21.4	9,354	-9.8	7,476
	September	19,051	29.1	10,105	-0.7	8,946
	October	19,144	19.4	11,373	-2.6	7,771
	November	16,911	9.2	9,510	-11.2	7,401
	December	19,663	9.5	10,943	-3.3	8,720

Source: Ministry of Finance

Table 26: Japan's Exports and Imports in Yen Terms, 1982-1986

(in billions of yen, customs clearance basis, seasonally unadjusted)

		Exports (f.o.b.)	Change Over Year-Earlier Period	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982		¥34,433	2.9%	¥32,656	3.8%	¥1,776
1983		34,909	1.4	30,015	-8.1	4,895
1984		40,325	15.5	32,321	7.7	8,004
1985		41,956	4.0	31,085	-3.8	10,871
1986		35,290	-15.9	21,551	-30.7	13,739
1985	January	2,795	17.2	2,671	3.5	124
	February	3,321	7.2	2,716	4.9	604
	March	3,783	6.3	2,953	4.3	830
	April	3,783	16.3	2,955	15.8	827
	May	3,629	11.4	2,779	-1.8	849
	June	3,614	5.7	2,359	-5.2	1,256
	July	3,759	6.3	2,633	-5.2	1,126
	August	3,298	1.7	2,467	-17.0	831
	September	3,534	-0.7	2,434	-1.3	1,100
	October	3,560	-3.3	2,586	-7.4	974
	November	3,242	-4.9	2,241	-15.6	1,002
	December	3,639	-7.4	2,292	-17.7	1,348
1986	January	2,584	-7.6	2,204	-17.5	380
	February	2,913	-12.3	2,155	-20.7	759
	March	3,177	-16.0	1,976	-33.1	1,201
	April	3,173	-16.1	1,948	-34.1	1,225
	May	2,988	-17.7	1,735	-37.6	1,253
	June	2,957	-18.2	1,715	-27.3	1,242
	July	3,076	-18.2	1,745	-33.7	1,331
	August	2,609	-20.9	1,450	-41.2	1,159
	September	2,948	-16.6	1,563	-35.8	1,385
	October	2,953	-17.1	1,754	-32.2	1,199
	November	2,712	-16.4	1,525	-31.9	1,187
	December	3,201	-12.1	1,781	-22.3	1,420

Source: Ministry of Finance

Table 27: Japan's Export and Import Quantum (Volume) Indexes, 1982-1986

(1980 = 100)

		Exports		Imports	
		Index	Change Over Year-Earlier Period	Index	Change Over Year-Earlier Period
1982		107.5	-2.4%	96.8	-0.6%
1983		116.8	8.7	98.1	1.3
1984		134.8	15.4	108.6	10.7
1985		141.2	4.7	108.8	0.2
1986		139.2	-1.4	123.3	13.3
1985	January	110.2	16.0	106.4	2.0
	February	129.0	4.5	106.0	1.6
	March	149.6	3.1	114.6	-1.5
	April	145.0	9.9	118.3	11.2
	May	141.5	7.9	111.4	-5.8
	June	143.1	2.7	94.4	-6.1
	July	150.6	6.2	107.5	-2.5
	August	134.1	3.7	104.2	-10.2
	September	143.6	1.9	103.6	5.8
	October	148.8	2.1	117.6	6.9
	November	139.7	2.1	108.1	0.6
	December	159.4	1.4	113.9	2.3
1986	January	112.6	2.2	109.4	2.8
	February	129.1	0.1	112.2	5.8
	March	146.2	-2.3	117.1	2.2
	April	144.6	-0.3	126.9	7.3
	May	141.3	-0.1	126.5	13.6
	June	139.9	-2.2	125.0	32.4
	July	149.3	-0.9	130.2	21.1
	August	129.4	-3.5	118.3	13.5
	September	148.5	3.4	125.7	21.3
	October	147.1	-1.1	138.7	17.9
	November	128.9	-7.7	115.7	7.0
	December	153.2	-3.9	134.1	17.7

Source: Ministry of Finance

Table 28: Japan's Export and Import Yen-Based Price Indexes, 1982-1986

(1980 = 100)

		Exports		Imports	
		Index	Change Over Year-Earlier Period	Index	Change Over Year-Earlier Period
1982		105.1	3.9%	109.6	7.9%
1983		98.8	-6.0	101.0	-7.8
1984		99.4	0.6	97.6	-3.4
1985		98.0	-1.4	95.2	-2.5
1986		83.8	-14.5	62.2	-34.7
1985	January	101.6	3.8	99.8	1.7
	February	102.7	4.2	100.8	2.9
	March	102.4	5.6	100.3	4.3
	April	101.1	4.3	99.2	3.3
	May	100.9	2.6	98.9	2.1
	June	100.2	1.1	97.7	0.8
	July	98.9	-2.1	95.8	-2.2
	August	97.7	-3.2	94.0	-4.2
	September	97.0	-4.2	93.2	-5.4
	October	93.1	-8.0	89.5	-9.2
	November	90.6	-9.7	87.0	-11.1
	December	89.9	-10.7	86.4	-12.2
1986	January	90.3	-11.1	86.0	-13.8
	February	87.1	-15.2	80.9	-19.7
	March	86.1	-15.9	68.5	-31.7
	April	85.3	-15.6	63.6	-35.9
	May	83.3	-17.4	59.9	-39.4
	June	83.7	-16.5	59.0	-39.6
	July	81.6	-17.5	55.7	-41.9
	August	80.3	-17.8	52.7	-43.9
	September	80.6	-16.9	53.1	-43.0
	October	81.2	-12.8	54.6	-39.0
	November	82.9	-8.5	56.1	-35.5
	December	83.0	-7.7	56.7	-34.4

Source: Bank of Japan

Table 29: Japan's Exports by Major Market, 1982-1986

(in millions of dollars, f.o.b. value basis)

	1982	1983	1984	1985	1986
Total Exports	$138,831	$146,928	$170,114	$175,638	$209,151
Developed Countries	67,995	76,563	96,421	102,468	131,149
United States	36,330	42,829	59,937	65,278	80,456
Canada	2,861	3,625	4,297	4,520	5,526
Western Europe	21,640	23,129	23,999	25,199	37,483
United Kingdom	4,813	4,983	4,675	4,723	6,647
Netherlands	1,661	1,726	1,816	2,071	3,261
Belgium	1,155	1,325	1,339	1,477	2,198
France	2,318	2,010	1,935	2,083	3,152
West Germany	5,018	5,877	6,621	6,938	10,477
Italy	864	875	1,032	1,117	1,723
European Community	17,064	18,523	19,405	20,016	30,675
Sweden	746	798	1,009	1,094	1,438
Switzerland	1,017	1,144	1,089	1,161	1,887
Australia	4,581	4,280	5,184	5,379	5,227
New Zealand	929	962	1,163	1,072	1,103
South Africa	1,655	1,738	1,640	1,020	1,355
Developing Countries	62,435	61,435	63,092	56,978	63,934
Latin America	9,086	6,391	8,549	8,486	9,495
Mexico	976	579	888	994	1,032
Panama	2,925	2,169	3,444	3,326	3,197
Brazil	1,043	738	640	615	973
Southeast Asia	31,873	34,548	36,795	33,248	41,788
Korea	4,881	6,004	7,227	7,097	10,475
Taiwan	4,255	5,086	5,986	5,026	7,852
Hong Kong	4,718	5,289	6,559	6,509	7,161
Thailand	1,907	2,507	2,426	2,030	2,030
Singapore	4,373	4,448	4,610	3,861	4,577
Malaysia	2,502	2,771	2,875	2,168	1,708
Brunei	145	86	72	90	58
Philippines	1,803	1,744	1,080	937	1,088
Indonesia	4,261	3,552	3,073	2,173	2,662
India	1,408	1,431	1,168	1,596	2,099
Middle East and North Africa	16,946	17,160	14,206	12,171	9,795
Iran	935	2,820	1,692	1,348	1,145
Iraq	2,755	632	806	1,306	1,210
Saudi Arabia	6,621	6,687	5,634	3,890	2,762
Kuwait	1,790	1,763	1,432	1,536	1,220
Qatar	347	233	175	164	148
Oman	461	469	508	554	288
United Arab Emirates	1,493	1,357	1,126	1,164	1,033
Subsaharan Africa	4,168	2,906	2,998	2,519	2,178
Communist Countries	8,401	8,830	10,602	16,190	14,064
China	3,511	4,912	7,217	12,478	9,856
U.S.S.R.	3,899	2,821	2,518	2,751	3,150

Source: Ministry of Finance

Table 30: Japan's Imports by Major Supplier, 1982-1986

(in millions of dollars, c.i.f. value basis)

	1982	1983	1984	1985	1986
Total Imports	$131,931	$126,393	$136,503	$129,539	$126,408
Developed Countries	48,428	49,325	54,740	53,121	62,233
United States	24,179	24,648	26,862	25,793	29,054
Canada	4,441	4,430	4,945	4,773	4,895
Western Europe	10,149	11,087	13,091	12,356	18,118
United Kingdom	1,874	1,940	2,267	1,317	3,573
Netherlands	347	443	434	439	577
Belgium	338	376	469	482	677
France	1,215	1,302	1,236	1,324	1,855
West Germany	2,355	2,414	2,684	2,928	4,298
Italy	942	981	1,049	1,050	1,495
European Community	7,560	8,120	9,334	8,893	13,989
Sweden	352	452	473	441	575
Switzerland	1,233	1,412	1,965	1,758	2,571
Australia	6,961	6,642	7,296	7,452	6,980
New Zealand	858	932	935	903	956
South Africa	1,840	1,587	1,611	1,844	2,229
Developing Countries	76,069	70,060	73,778	67,936	55,941
Latin America	6,268	6,462	7,230	6,242	6,194
Mexico	1,522	1,889	2,260	1,870	1,439
Panama	107	68	168	81	84
Brazil	1,603	1,669	1,991	1,840	1,875
Southeast Asia	29,985	27,988	31,883	30,264	29,489
Korea	3,254	3,365	4,213	4,092	5,292
Taiwan	2,443	2,622	3,204	3,386	4,691
Hong Kong	622	670	842	767	1,074
Thailand	1,041	1,019	1,040	1,027	1,391
Singapore	1,826	1,468	1,775	1,594	1,463
Malaysia	3,010	3,131	4,412	4,330	3,846
Brunei	2,636	2,367	2,203	1,892	1,285
Philippines	1,576	1,307	1,419	1,243	1,221
Indonesia	12,005	10,432	11,176	10,119	7,311
India	1,122	1,131	1,132	1,189	1,297
Middle East and North Africa	37,764	33,796	33,066	29,927	18,427
Iran	2,567	4,231	2,869	2,506	1,383
Iraq	780	141	172	622	957
Saudi Arabia	20,528	15,530	14,734	10,245	5,205
Kuwait	1,627	1,387	1,589	1,162	1,157
Qatar	1,784	1,701	2,594	2,185	1,127
Oman	1,702	2,012	2,420	3,066	1,616
United Arab Emirates	7,983	7,793	7,720	8,916	5,947
Subsaharan Africa	1,610	1,345	1,166	1,052	1,356
Communist Countries	7,431	7,004	7,982	8,480	8,232
China	5,352	5,087	5,958	6,483	5,652
U.S.S.R.	1,682	1,456	1,394	1,429	1,972

Source: Ministry of Finance

Table 31: Japan's Trade Balance with Major Trading Partners, 1982-1986

(in millions of dollars)

	1982	1983	1984	1985	1986
Overall Balance	$6,900	$20,534	$33,611	$46,099	$82,743
Developed Countries	19,567	27,239	41,680	49,347	68,917
United States	12,151	18,181	33,075	39,485	51,401
Canada	-1,580	-805	-648	-253	631
Western Europe	11,491	12,042	10,908	12,843	19,365
United Kingdom	2,939	3,043	2,408	2,906	3,073
Netherlands	1,314	1,283	1,381	1,632	2,684
Belgium	817	948	870	995	1,521
France	1,103	708	700	759	1,297
West Germany	2,663	3,464	3,937	4,010	6,180
Italy	-78	-106	-17	67	228
European Community	9,504	10,402	10,071	11,124	16,687
Sweden	394	346	537	653	864
Switzerland	-216	-269	-876	-597	-684
Australia	-2,381	-2,362	-2,112	-2,073	-1,754
New Zealand	71	31	228	169	147
South Africa	-185	151	229	-824	-874
Developing Countries	-13,634	-8,625	-10,686	-10,958	7,993
Latin America	2,818	-71	1,318	2,244	3,301
Mexico	-546	-1,310	-1,372	-876	-407
Panama	2,818	2,101	3,276	3,245	3,113
Brazil	-560	-931	-1,351	-1,225	-902
Southeast Asia	1,888	6,560	4,912	2,984	12,299
Korea	1,627	2,639	3,014	3,005	5,183
Taiwan	1,812	2,463	2,782	1,640	3,161
Hong Kong	4,096	4,619	5,717	5,742	6,087
Thailand	866	1,488	1,385	1,004	639
Singapore	2,547	2,981	2,835	2,267	3,113
Malaysia	-508	-360	-1,537	-2,162	-2,137
Brunei	-2,491	-2,281	-2,131	-1,802	-1,227
Philippines	227	437	-339	-307	-133
Indonesia	-7,744	-6,880	-8,102	-7,947	-4,649
India	286	300	35	408	802
Middle East and North Africa	-20,818	-16,636	-18,861	-17,766	-8,632
Iran	-1,632	-1,412	-1,177	-1,158	-239
Iraq	1,976	491	634	684	253
Saudi Arabia	-13,906	-8,843	-9,100	-6,355	-2,443
Kuwait	163	375	-157	374	63
Qatar	-1,436	-1,468	-2,419	-2,021	-979
Oman	-1,242	-1,544	-1,912	-2,512	-1,328
United Arab Emirates	-6,490	-6,436	-6,594	-7,752	-4,915
Subsaharan Africa	2,558	1,561	1,833	1,466	822
Communist Countries	970	1,926	2,620	7,710	5,832
China	-1,842	-175	1,259	5,995	4,204
U.S.S.R.	2,217	1,365	1,124	1,321	1,178

Source: Ministry of Finance

Table 32: Japan's Exports by Commodity, 1982-1986

(in millions of dollars, f.o.b. value basis)

	1982	1983	1984	1985	1986
Total Exports	$138,831	$146,928	$170,114	$175,638	$209,151
Food and Live Animals	1,270	1,246	1,290	1,202	1,366
Fish and Fish Products	681	663	717	685	766
Beverages and Tobacco	131	144	150	114	110
Crude Materials (excl. fuels)	1,159	1,194	1,250	1,240	1,414
Textile Fibers and Waste	619	644	659	635	695
Mineral Fuels	411	432	505	539	588
Animal and Vegetable Oils and Fats	88	118	148	111	91
Chemicals	6,365	6,983	7,626	7,698	9,484
Chemical Elements and Compounds	2,751	2,945	3,121	3,243	3,953
Organic Chemicals	2,040	2,177	2,371	2,512	3,141
Inorganic Chemicals	702	755	738	720	799
Dyeing, Tanning and Coloring Materials	446	501	558	558	707
Pharmaceuticals	305	348	356	391	513
Plastic Materials	1,798	2,039	2,351	2,261	2,843
Manufactured Goods Classified Mainly by Material	31,100	28,935	30,137	28,836	29,600
Tires and Other Rubber Manufactures	1,665	1,823	1,973	1,895	2,040
Tires for Motor Vehicles	1,111	1,267	1,382	1,302	1,642
Paper and Paper Products	846	872	994	1,029	1,184
Textiles (excl. fibers and apparel)	5,075	5,311	5,318	4,900	5,445
Yarn and Thread	1,022	1,122	1,168	1,000	1,152
Woven Fabrics	3,438	3,626	3,546	3,361	3,706
Made-up Articles (excl. clothing)	615	563	604	540	586
Nonmetallic Mineral Manufactures	1,945	2,150	2,272	2,148	2,362
Glass and Glassware	351	422	518	594	686
Tableware	458	518	569	528	566
Iron and Steel	15,645	12,843	13,852	13,566	12,706
Bars, Rods, Shapes and Sections	2,116	1,816	1,715	1,777	1,437
Wire Rods	339	529	626	568	639
Universals, Plates and Sheets	4,753	5,339	5,706	5,209	5,250
Hoops and Strip	1,191	1,309	1,468	1,285	1,325
Tubes, Pipes and Fittings	6,795	3,370	3,742	4,023	3,399
Nonferrous Metals	1,282	1,588	1,501	1,467	1,564
Copper and Alloys	590	839	614	585	721
Aluminum and Alloys	396	473	619	615	606
Metal Manufactures	4,288	3,941	3,812	3,458	3,913
Finished Structural Parts and Structures	1,103	1,047	751	528	694
Nails and Industrial Fasteners	431	473	603	516	514
Tools	551	594	666	701	897

(continued)

Table 32: Japan's Exports by Commodity, 1982-1986 (continued)

(in millions of dollars, f.o.b. value basis)

	1982	1983	1984	1985	1986
Machinery and Transport Equipment	$78,069	$85,133	$102,680	$108,387	$133,326
Nonelectric Machinery	20,317	23,103	27,879	29,537	38,381
Power Generating Machinery	2,792	2,992	3,835	3,789	4,940
Steam Generating Boilers and Boiler Plants	361	327	525	463	567
Internal Combustion Engines	1,955	2,240	2,800	2,885	3,842
Agricultural Machinery	950	1,160	1,119	1,028	1,183
Tractors	794	943	841	746	869
Office Machinery	3,139	5,139	7,554	7,785	11,305
Typewriters	295	432	609	555	574
Calculators	542	554	698	660	556
Data Processing Equipment	1,361	2,849	4,566	4,625	7,270
Metalworking Machinery	1,441	1,489	2,021	2,599	3,637
Lathes	372	302	423	524	676
Textile Machinery	668	759	869	1,007	1,384
Sewing Machines	424	457	526	524	671
Printing and Bookbinding Machinery	196	252	353	445	616
Construction and Mining Machinery	1,885	1,725	1,709	1,995	2,187
Excavators	687	619	813	965	1,062
Heating and Cooling Machinery	2,060	2,142	1,887	1,588	1,793
Pumps and Centrifuges	1,495	1,535	1,671	1,678	1,912
Air and Gas Compressors	462	502	642	669	740
Mechanical Handling Equipment	1,440	1,404	1,559	1,609	1,975
Bearings	497	512	658	651	806
Electric Machinery	19,718	22,886	29,245	29,701	35,519
Electric Power Machinery	1,787	1,873	2,137	2,058	2,453
Generators	666	628	630	532	490
Motors	358	416	512	495	681
Switchboards and Control Panels	485	533	691	594	810
Insulated Wire and Cable	826	781	684	701	744
Telecommunications Equipment	8,025	8,867	11,077	12,242	13,644
Televisions	1,489	1,472	1,905	2,625	1,727
Radios	2,401	2,440	2,820	2,654	2,756
Microphones, Loudspeakers and Amplifiers	739	848	963	981	1,111
Household Electric Appliances	1,106	1,412	1,817	1,968	1,874
Batteries	306	352	404	415	579
Electronic Tubes and Semiconductors	2,686	3,731	5,816	4,753	6,342
Tubes	695	821	984	1,002	1,339
Discrete Devices	1,135	1,762	3,248	2,419	3,185
Automotive Electrical Equipment	540	602	681	724	944
Electronic Measuring and Controlling Instruments	648	784	964	1,127	1,477
Condensers	327	406	534	446	654
Transport Equipment	38,033	39,143	45,556	49,149	59,426
Railway Equipment	519	411	764	525	365
Road Motor Vehicles	24,559	26,123	29,821	34,377	42,676
Cars	18,015	19,535	21,899	25,402	32,945
Assembled Trucks and Buses	4,940	5,175	6,372	7,396	8,022
Truck and Bus Chassis with Engines	1,457	1,371	1,475	1,517	1,633

(continued)

Table 32: Japan's Exports by Commodity, 1982-1986 (continued)

(in millions of dollars, f.o.b. value basis)

	1982	1983	1984	1985	1986
Road Motor Vehicle Parts	$2,564	$3,423	$4,513	$5,228	$8,253
Motorcycles and Parts	3,062	2,667	2,598	2,626	2,686
Ships and Boats	6,870	5,996	7,353	5,929	4,879
Tankers	1,468	719	693	634	726
Cargo Ships	2,924	3,086	4,481	3,490	2,509
Miscellaneous Manufactured Goods	18,723	21,198	24,655	25,752	31,125
Clothing	547	659	776	728	734
Scientific, Medical and Optical Instruments	4,842	8,213	9,268	10,046	12,408
Cameras Lenses	492	479	449	433	542
Still Cameras	896	1,127	1,217	1,232	1,601
Measuring Instruments	454	497	607	676	845
Watches and Clocks	1,441	1,550	1,747	1,730	1,963
Stereo Equipment and Audio and Video Cassette Recorders and Players	6,163	7,439	9,222	9,230	11,229
Video Cassette Recorders	4,337	5,304	6,819	6,622	7,416
Phonograph Records and Tapes	1,358	1,383	1,503	1,665	2,044
Musical Instruments	505	555	640	688	966
Office and Stationery Supplies	267	324	391	412	528
Unclassified Commodities	1,516	1,546	1,674	1,759	2,048

Source: Ministry of Finance

Table 33: Japan's Imports by Commodity, 1982-1986

(in millions of dollars, c.i.f. value basis)

	1982	1983	1984	1985	1986
Total Imports	$131,931	$126,393	$136,503	$129,539	$126,408
Food and Live Animals	13,745	14,051	15,191	14,787	18,246
Meat and Meat Products	1,711	1,772	1,897	1,927	2,587
Fresh and Frozen Beef	387	445	455	463	554
Fresh and Frozen Pork	542	645	714	703	1,041
Fish and Fish Products	3,918	3,884	4,096	4,610	6,426
Fresh and Frozen Shrimp and Lobster	1,372	1,349	1,354	1,431	1,966
Fresh and Frozen Salmon	421	353	345	493	571
Grains and Cereal Products	3,960	4,191	4,743	3,951	3,485
Wheat	1,120	1,126	1,114	974	886
Corn for Mixed Feed	1,381	1,572	1,669	1,363	1,158
Sorghum for Mixed Feed	419	386	608	536	462
Fruits and Vegetables	1,609	1,613	1,828	1,828	2,364
Fruits	958	973	1,055	1,135	1,518
Vegetables	651	639	733	693	846
Coffee	615	649	770	747	1,130
Animal Feeds	404	548	539	474	671
Beverages and Tobacco	830	845	836	760	941
Crude Materials (excl. fuels)	18,636	17,943	19,153	17,715	17,292
Hides and Skins	441	412	568	504	563
Oilseeds and Oil Nuts	1,727	1,952	2,210	1,875	1,568
Soybeans	1,156	1,375	1,447	1,206	1,072
Rubber	451	597	638	544	578
Logs and Lumber	4,546	3,887	3,909	3,700	4,044
Logs	3,626	3,045	3,107	2,781	2,923
Lumber	920	842	803	919	1,106
Wood Pulp	845	888	1,001	910	1,124
Textile Fibers and Waste	2,327	2,077	2,484	2,155	1,863
Wool	712	560	675	670	621
Cotton	1,271	1,145	1,342	1,049	817
Crude Minerals	816	838	1,050	1,088	943
Metal Ores, Concentrates and Scrap	6,757	6,513	6,572	6,232	5,763
Iron Ore and Concentrates	3,630	3,147	3,199	3,045	2,759
Steel Scrap	263	451	529	407	375
Nonferrous Ores	2,530	2,403	2,334	2,229	2,080
Copper	1,419	1,475	1,255	1,209	1,228
Nonferrous Scrap	333	507	502	546	544
Mineral Fuels	65,618	58,925	60,337	55,790	36,904
Coal	5,782	4,877	5,311	5,197	4,927
Coking Coal	4,849	4,053	4,386	4,154	3,956
Petroleum and Products	51,409	45,705	45,486	40,575	24,117
Crude Petroleum	46,274	40,063	39,379	34,599	19,481
Petroleum Products	5,135	5,642	6,107	5,976	4,636
Residual Fuel Oil	1,691	1,807	2,130	2,020	1,093
Natural and Manufactured Gas	8,416	8,332	9,529	10,006	7,843
Liquefied Petroleum Gas	3,219	3,285	2,935	2,806	2,092
Liquefied Methane Gas	5,197	5,046	6,594	7,200	5,751

(continued)

Table 33: Japan's Imports by Commodity, 1982-1986 (continued)

(in millions of dollars, c.i.f. value basis)

	1982	1983	1984	1985	1986
Animal and Vegetable Oils and Fats	$275	$268	$372	$329	$245
Chemicals	6,824	7,207	8,346	8,073	9,733
Chemical Elements and Compounds	3,193	3,554	4,370	4,142	4,566
Organic Chemicals	1,830	2,112	2,423	2,411	2,849
Inorganic Chemicals	556	526	677	742	767
Pharmaceuticals	1,249	1,215	1,259	1,292	1,724
Plastic Materials	672	672	763	745	981
Manufactured Goods Classified Mainly by Material	9,848	10,147	11,932	10,886	12,390
Wood Manufactures	813	774	842	838	1,033
Wood Chips	643	603	645	604	679
Paper and Paper Products	513	522	545	545	747
Textiles (excl. fibers and apparel)	1,602	1,487	1,926	1,891	2,174
Nonmetallic Mineral Manufactures	1,032	1,101	1,201	1,264	1,927
Diamonds	477	526	558	567	939
Iron and Steel	1,216	1,349	1,912	1,480	1,762
Ferroalloys	390	411	588	524	532
Nonferrous Metals	3,885	4,127	4,700	4,042	3,655
Precious Metals	599	740	848	713	825
Copper and Alloys	611	420	816	592	473
Aluminum and Alloys	1,938	2,165	2,076	1,861	1,641
Metal Manufactures	471	500	507	512	637
Machinery and Transport Equipment	8,181	9,385	10,809	11,106	13,283
Nonelectric Machinery	3,777	3,665	4,495	4,728	5,318
Power Generating Machinery	595	670	939	896	897
Aircraft Engines	363	389	458	630	666
Office Machinery	1,003	1,026	1,362	1,545	1,706
Computers, Peripheral Equipment and Parts	951	979	1,318	1,509	1,671
Electric Machinery	2,994	3,221	3,989	3,795	4,506
Electronic Tubes and Semiconductors	747	909	1,294	1,016	1,216
Telecommunications Equipment	416	427	465	438	619
Electronic Measuring and Controlling Instruments	542	566	598	643	762
Transport Equipment	1,410	2,499	2,325	2,583	3,459
Cars	348	398	457	539	1,070
Aircraft	800	1,472	928	1,484	1,777
Ships and Boats	78	390	645	286	231
Miscellaneous Manufactured Goods	5,398	5,204	6,088	6,349	8,634
Clothing	1,832	1,501	1,949	1,995	2,853
Scientific, Medical and Optical Instruments	737	790	947	929	952
Unclassified Commodities	2,576	2,418	3,439	3,744	8,742
Nonmonetary Gold	1,613	1,376	2,246	2,027	6,984

Source: Ministry of Finance

Table 34: Japan's Dollar-Based Trade with the United States, 1982-1986

(in millions of dollars, customs clearance basis, seasonally unadjusted)

		Exports (f.o.b.)	Change Over Year-Earlier Period	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982		$36,330	-5.9%	$24,179	-4.4%	$12,151
1983		42,829	17.9	24,648	1.9	18,181
1984		59,937	39.9	26,862	9.0	33,075
1985		65,278	8.9	25,793	-4.0	39,485
1986		80,456	23.3	29,054	12.6	51,401
1985	January	4,102	20.4	2,206	2.9	1,896
	February	4,558	3.5	2,229	-1.7	2,329
	March	4,686	-0.1	2,337	2.8	2,349
	April	5,784	12.5	2,325	9.3	3,459
	May	5,699	12.2	2,289	-5.7	3,411
	June	5,354	2.4	2,027	-7.7	3,327
	July	5,823	4.6	2,129	-8.6	3,695
	August	5,130	5.8	2,101	-12.9	3,030
	September	5,661	5.9	1,881	-7.6	3,780
	October	6,038	9.4	2,357	3.2	3,681
	November	6,058	15.6	2,029	0.1	4,029
	December	6,384	16.7	1,883	-19.5	4,501
1986	January	4,956	20.8	2,055	-6.8	2,901
	February	5,726	25.6	2,007	-9.9	3,719
	March	6,013	28.3	2,215	-5.2	3,798
	April	7,019	21.3	2,275	-2.2	4,744
	May	6,940	21.8	2,909	27.1	4,031
	June	6,962	30.0	3,121	54.0	3,841
	July	7,491	28.6	2,977	39.9	4,513
	August	6,496	26.6	2,086	-0.7	4,411
	September	7,293	28.8	2,462	30.9	4,831
	October	7,506	24.3	2,524	7.1	4,981
	November	6,893	13.8	2,001	-1.4	4,892
	December	7,161	12.2	2,421	28.5	4,740

Source: Ministry of Finance

Table 35: Japan's Yen-Based Trade with the United States, 1982-1986

(in billions of yen, customs clearance basis, seasonally unadjusted)

		Exports (f.o.b.)	Change Over Year-Earlier Period	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982		Y9,015	5.8%	Y5,991	7.9%	Y3,025
1983		10,179	12.9	5,855	-2.3	4,323
1984		14,221	39.7	6,364	8.7	7,858
1985		15,583	9.6	6,213	-2.4	9,369
1986		13,564	-13.0	4,919	-20.9	8,646
1985	January	1,037	30.2	556	10.9	481
	February	1,171	13.6	572	7.9	599
	March	1,221	13.9	609	17.0	612
	April	1,471	27.1	592	23.5	879
	May	1,433	23.8	575	4.2	858
	June	1,340	10.7	507	-0.3	832
	July	1,432	7.7	524	-5.8	907
	August	1,221	3.3	500	-15.0	721
	September	1,356	4.3	450	-9.0	906
	October	1,341	-1.5	522	-7.3	819
	November	1,268	-6.9	425	-14.2	843
	December	1,294	-3.9	382	-33.7	912
1986	January	1,001	-3.4	415	-25.3	586
	February	1,107	-5.5	389	-32.1	718
	March	1,083	-11.3	399	-34.4	684
	April	1,254	-14.7	406	-31.3	848
	May	1,157	-19.2	486	-15.5	671
	June	1,177	-12.1	528	4.1	649
	July	1,220	-14.8	486	-7.3	734
	August	1,007	-17.5	323	-35.3	684
	September	1,128	-16.8	381	-15.4	748
	October	1,158	-13.7	389	-25.4	768
	November	1,105	-12.8	321	-24.5	785
	December	1,166	-9.9	394	3.3	772

Source: Ministry of Finance

Table 36: Yen-Dollar Exchange Rate Used to Convert Customs Clearance Trade Data, 1982-1986*

	Exports	Imports
1982 Average	Y248.33	Y248.30
1983 Average	237.52	237.59
1984 Average	236.95	236.91
1985 Average	240.29	240.17
1986 Average	169.99	170.08
1985 January	252.76	252.04
February	256.95	256.66
March	260.47	260.53
April	254.35	254.49
May	251.43	251.36
June	250.20	250.26
July	245.82	246.22
August	237.94	237.92
September	239.47	239.20
October	222.05	221.43
November	209.33	209.32
December	202.67	202.60
1986 January	202.02	202.07
February	193.28	193.53
March	180.12	180.21
April	178.70	178.62
May	166.77	167.08
June	169.07	169.29
July	162.84	163.17
August	155.03	155.04
September	154.72	154.66
October	154.23	154.23
November	160.37	160.34
December	162.77	162.73

*Reflects the exchange rate that prevailed at the time export or import contracts were signed.

Source: Ministry of Finance

Table 37: Yen-Dollar Exchange Rate on Tokyo Foreign Exchange Market, 1982-1986

(average for period)

	1982	1983	1984	1985	1986
Average	Y249.08	Y237.51	Y237.52	Y238.54	Y168.52
January	224.59	232.94	233.94	254.18	200.07
February	235.17	236.24	233.68	260.24	184.64
March	240.72	238.03	225.40	258.63	178.93
April	244.86	237.71	224.95	251.67	175.62
May	236.90	234.74	230.66	251.54	166.83
June	251.04	240.15	233.21	248.99	167.95
July	255.12	240.50	242.84	241.75	158.60
August	258.82	244.33	242.30	237.21	154.00
September	262.65	242.77	245.23	236.95	154.72
October	271.40	233.01	246.79	214.73	155.95
November	265.13	235.31	243.32	203.72	162.64
December	242.52	234.41	247.95	202.82	162.29

Source: International Monetary Fund

Table 38: Japan's Foreign Direct Investment by Country, FY 1982-FY 1986

(in millions of dollars)

	FY 1982	FY 1983	FY 1984	FY 1985	FY 1986	Total March 31, 1987
United States	$2,738	$2,565	$3,360	$5,395	$10,165	$35,455
Canada	167	136	184	100	276	1,951
North America	2,905	2,701	3,544	5,495	10,441	37,406
Panama	722	1,223	1,671	1,533	2,401	8,841
Brazil	322	410	318	314	270	4,857
Mexico	143	121	56	101	226	1,556
Caymans	6	1	1	132	930	1,279
Bahamas	---	1	97	298	792	1,247
Peru	185	---	6	10	---	696
Bermuda	5	14	29	148	16	617
Latin America	1,503	1,878	2,290	2,616	4,737	20,373
Indonesia	410	374	374	408	250	8,673
Hong Kong	400	563	412	131	502	3,433
Singapore	180	322	225	339	302	2,571
Korea	103	129	107	134	436	2,118
Malaysia	83	140	142	79	158	1,283
Taiwan	55	103	65	114	291	1,051
Philippines	34	65	46	61	21	913
Thailand	94	72	119	48	124	884
China	---	---	114	100	226	513
Asia	1,384	1,847	1,628	1,435	2,327	21,790
Kuwait	41	66	55	34	41	1,309
Iran	0	1	0	0	---	1,003
Middle East	124	175	273	45	44	3,016
United Kingdom	176	153	318	375	984	4,125
Netherlands	73	113	452	613	651	2,337
Luxembourg	127	265	315	300	1,092	2,308
West Germany	194	117	245	172	210	1,552
France	102	93	117	67	152	970
Belgium	64	126	71	84	50	793
Switzerland	79	37	229	60	91	753
Spain	19	52	140	91	86	601
Europe	876	990	1,937	1,930	3,469	14,471
Liberia	434	323	281	159	28[illegible]	2,744
Africa	489	364	326	172	[illegible]	3,678
Australia	370	166	105	468	[illegible]	4,502
Oceania	421	191	157	525	[illegible]	5,234
Total	7,703	8,145	10,155	12,217	22,320	105,970

Source: Ministry of Finance

Table 39: Japan's Foreign Direct Investment by Industry, FY 1982-FY 1986

(in millions of dollars)

	FY 1982	FY 1983	FY 1984	FY 1985	FY 1986	Total March 31, 1987
Manufacturing Sector	$2,076	$2,588	$2,505	$2,352	$3,806	$28,206
Food Products	78	77	118	90	127	1,218
Textiles	67	174	85	28	63	2,146
Wood Products	76	91	115	15	57	1,178
Chemicals	322	450	223	133	355	4,337
Metals	468	479	718	385	328	5,518
Nonelectric Machinery	164	169	185	352	626	2,597
Electric Machinery	267	502	409	513	987	4,734
Transport Equipment	439	486	437	627	828	4,201
Other	195	160	215	208	435	2,276
Nonmanufacturing Sector	5,478	5,357	7,429	9,536	17,949	74,285
Agriculture/ Forestry	40	18	26	12	15	795
Fisheries	22	17	24	42	52	494
Mining	685	382	484	598	669	12,424
Construction	44	55	112	94	250	1,047
Trade/Sales	1,899	1,164	1,482	1,550	1,861	14,538
Banking/Finance/ Insurance	533	1,167	2,085	3,805	7,240	18,099
Services	702	622	681	665	1,560	6,246
Transportation	924	1,363	1,651	1,240	1,925	7,826
Real Estate	354	375	430	1,207	3,997	6,331
Other	276	193	454	322	379	6,285
Branch Offices	149	200	221	329	566	2,884
Real Estate Transactions*	---	---	---	---	---	595
Total	7,703	8,145	10,155	12,217	22,320	105,970

*Overseas real estate transactions have been excluded from Japan's foreign direct investment data since December 1, 1980 because of changes in the Foreign Exchange and Foreign Trade Control Law.

Source: Ministry of Finance

Table 40: U.S. International Transactions, 1982-1986

(in millions of dollars, IMF value basis)

	1982	1983	1984	1985	1986
Merchandise Trade Balance	$-36,444	$-67,080	$-112,522	$-122,148	$-144,339
Exports	211,198	201,820	219,900	215,935	224,361
Imports	247,642	268,900	332,422	338,083	368,700
Services Balance	36,720	30,313	17,686	21,054	18,647
Military	-274	-243	-1,942	-3,339	-3,662
Travel	-1,599	-4,595	-7,570	-9,080	-7,994
Other Transportation	607	368	-1,034	-1,786	-1,909
Investment Income	28,666	24,875	18,491	25,398	20,844
Direct	18,226	14,901	11,988	26,586	30,851
Other	10,440	9,974	6,503	-1,188	-10,007
Fees and Royalties	4,558	4,553	4,689	5,274	5,785
Other Services	4,762	5,355	5,052	4,587	5,583
Unilateral Transfers Balance	-8,956	-9,480	-12,178	-15,301	-15,658
Current Account Balance	-8,679	-46,246	-107,013	-116,393	-141,352
Private Capital Flows (net)	-19,904	35,447	85,796	106,301	84,315
Direct Investments (net)	16,161	11,573	22,538	1,755	-2,994
Securities (net)	5,129	10,091	30,813	63,914	75,775
Banking Flows (net)	-45,437	20,414	22,722	39,722	18,311
Other Flows (net)	4,243	-6,631	9,723	911	-6,777
U.S. Government Assets (other than official reserves) (net)	-6,131	-5,006	-5,476	-2,831	-1,920
U.S. Official Reserve Assets (net)	-4,965	-1,196	-3,131	-3,858	312
Foreign Official Assets (net)	3,593	5,845	2,987	-1,140	34,698
Statistical Discrepancy	36,085	11,154	26,837	17,920	23,947

Note: For capital transactions, credits (+) indicate net inflows and debits (-) indicate net outflows.

Source: Department of Commerce

Table 41: U.S. Current Account Balance with Japan, 1982-1986

(in millions of dollars, IMF value basis)

	1982	1983	1984	1985	1986
Merchandise Trade Balance	$-16,989	$-21,055	$-36,969	$-43,508	$-54,403
Exports	20,694	21,789	23,241	22,145	26,361
Imports	37,683	42,844	60,210	65,653	80,764
Services Balance	1,655	1,339	-756	-1,709	-1,815
Military	-870	-917	-1,035	-1,264	-1,834
Travel	1,211	1,307	1,396	1,465	1,437
Other Transportation	-134	-177	-471	-659	-846
Investment Income	498	39	-1,613	-2,381	-1,784
Direct	250	92	-1,154	56	2,136
Other	248	-53	-459	-2,437	-3,920
Fees and Royalties	919	809	835	937	1,213
Other Services	31	278	132	193	-1
Unilateral Transfers Balance	-90	-49	-67	-68	-63
Current Account Balance	-15,424	-19,765	-37,792	-45,285	-56,282

Source: Department of Commerce

Table 42: U.S. Exports and Imports, 1982-1986

(in millions of dollars, seasonally unadjusted)

		Exports* (f.a.s.)	Change Over Year-Earlier Period	Imports (Customs)	Change Over Year-Earlier Period	Trade Balance	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982		$212,275	-9.2%	$243,952	-6.5%	$-31,677	$254,885	-6.8%	$-42,610
1983		200,538	-5.5	258,048	5.8	-57,510	269,878	5.9	-69,341
1984		217,888	8.7	325,726	26.2	-107,838	341,177	26.4	-123,289
1985		213,146	-2.2	345,275	6.0	-132,129	361,626	6.0	-148,480
1986		217,304	2.0	369,961	7.1	-152,657	387,082	7.0	-169,777
1985	January	18,673	8.8	28,836	8.8	-10,163	30,245	9.2	-11,572
	February	17,143	0.8	25,941	3.3	-8,798	27,169	3.6	-10,026
	March	20,330	3.7	28,725	3.6	-8,395	30,107	3.9	-9,777
	April	17,973	1.1	28,572	1.5	-10,599	29,907	1.4	-11,935
	May	18,337	-2.1	29,302	10.1	-10,965	30,712	10.2	-12,375
	June	18,012	-2.0	30,136	16.1	-12,124	31,596	16.3	-13,584
	July	16,727	-8.9	27,000	-14.5	-10,274	28,312	-14.7	-11,585
	August	16,584	-4.2	26,247	-2.9	-9,663	27,512	-3.2	-10,927
	September	17,034	-3.2	31,349	12.6	-14,315	32,860	12.6	-15,826
	October	17,618	-5.3	28,429	3.3	-10,811	29,695	2.9	-12,077
	November	17,721	-2.5	30,010	9.9	-12,290	31,371	9.8	-13,651
	December	16,994	-11.2	30,727	26.1	-13,733	32,141	25.9	-15,146
1986	January	17,006	-8.9	32,005	11.0	-14,999	33,465	10.6	-16,459
	February	17,735	3.4	28,895	11.4	-11,161	30,225	11.2	-12,491
	March	18,913	-7.0	31,972	11.3	-13,059	33,435	11.1	-14,522
	April	17,965	-0.0	28,762	0.7	-10,797	30,036	0.4	-12,071
	May	17,431	-4.9	30,272	3.3	-12,842	31,638	3.0	-14,208
	June	19,070	5.9	31,764	5.4	-12,694	33,240	5.2	-14,170
	July	17,707	5.9	34,121	26.4	-16,414	35,745	26.3	-18,037
	August	17,604	6.2	29,476	12.3	-11,871	30,925	12.4	-13,321
	September	17,518	2.8	28,695	-8.5	-11,177	30,078	-8.5	-12,560
	October	19,330	9.7	30,018	5.6	-10,688	31,389	5.7	-12,059
	November	18,595	4.9	36,187	20.6	-17,592	37,816	20.5	-19,221
	December	18,431	8.5	27,795	-9.5	-9,364	29,089	-9.5	-10,658

*Domestic and foreign merchandise, including Department of Defense shipments.

Source: Department of Commerce

Table 43: U.S. Exports by Major Market, 1982-1986

(in millions of dollars, f.a.s. value basis)

	1982	1983	1984	1985	1986
Total	$212,275	$200,538	$217,888	$213,146	$217,304
Western Hemisphere	67,312	63,970	76,209	78,271	76,411
Canada	33,720	38,244	46,524	47,251	45,333
Mexico	11,817	9,082	11,992	13,635	12,392
Brazil	3,423	2,557	2,640	3,140	3,885
Venezuela	5,206	2,811	3,377	3,399	3,141
Colombia	1,903	1,514	1,450	1,468	1,319
Western Europe	60,054	55,980	58,019	56,763	61,642
United Kingdom	10,645	10,621	12,210	11,273	11,418
West Germany	9,291	8,737	9,084	9,050	10,561
Netherlands	8,604	7,767	7,554	7,269	7,848
France	7,110	5,961	6,037	6,096	7,216
Belgium-Luxembourg	5,229	5,049	5,301	4,918	5,399
Italy	4,616	3,908	4,375	4,625	4,838
European Community*	47,932	44,311	46,976	45,776	53,154
Switzerland	2,707	2,960	2,563	2,288	2,977
Spain	3,456	2,763	2,561	2,524	2,615
Sweden	1,689	1,581	1,542	1,925	1,871
Asia and Middle East	61,878	61,620	61,506	56,869	61,396
Japan	20,966	21,894	23,575	22,631	26,882
Korea	5,529	5,925	5,983	5,956	6,355
Taiwan	4,367	4,667	5,003	4,700	5,524
Saudi Arabia	9,026	7,903	5,564	4,474	3,449
Singapore	3,214	3,759	3,675	3,476	3,380
Hong Kong	2,453	2,564	3,062	2,786	3,030
Israel	2,271	2,017	2,194	2,580	2,239
Malaysia	1,736	1,684	1,856	1,539	1,730
India	1,599	1,828	1,570	1,642	1,536
Philippines	1,854	1,807	1,766	1,379	1,363
Indonesia	2,025	1,466	1,216	795	946
Australia and Oceania	5,700	4,827	5,745	6,399	6,659
Australia	4,535	3,954	4,793	5,441	5,551
Africa	10,271	8,768	8,827	7,388	5,978
Egypt	2,875	2,813	2,704	2,323	1,982
South Africa	2,368	2,129	2,265	1,205	1,158
Nigeria	1,295	864	577	676	409
Communist Countries in Asia	2,945	2,194	3,027	3,876	3,136
China	2,912	2,173	3,004	3,856	3,106
Eastern Europe	3,610	2,891	4,188	3,215	1,989
Soviet Union	2,587	2,003	3,284	2,423	1,248

*1986 figure includes Spain and Portugal.

Source: Department of Commerce

Table 44: U.S. Imports by Major Supplier, 1982-1986

(in millions of dollars, c.i.f. value basis)

	1982	1983	1984	1985	1986
Total	$254,885	$269,878	$341,177	$361,626	$387,082
Western Hemisphere	86,396	96,127	116,974	118,523	112,774
Canada	46,792	52,546	66,911	69,427	68,662
Mexico	15,770	17,019	18,267	19,392	17,558
Brazil	4,643	5,382	8,273	8,147	7,340
Venezuela	4,957	5,173	6,820	6,830	5,446
Colombia	883	1,058	1,253	1,456	2,039
Western Europe	54,802	56,437	74,921	84,209	94,297
United Kingdom	13,541	12,900	15,044	15,573	16,033
West Germany	12,503	13,229	17,810	21,232	26,128
Netherlands	2,652	3,149	4,330	4,368	4,363
France	5,815	6,308	8,516	9,960	10,586
Belgium-Luxembourg	2,502	2,510	3,287	3,567	4,191
Italy	5,656	5,819	8,504	10,381	11,312
European Community*	44,466	45,879	60,267	68,246	79,520
Switzerland	2,394	2,552	3,199	3,579	5,367
Spain	1,636	1,685	2,627	2,774	2,956
Sweden	2,092	2,549	3,427	4,339	4,637
Asia and Middle East	87,978	94,802	124,664	135,840	157,426
Japan	39,932	43,559	60,371	72,380	85,457
Korea	6,011	7,657	10,027	10,713	13,497
Taiwan	9,587	12,110	16,088	17,761	21,252
Saudi Arabia	7,860	3,840	4,009	2,027	4,054
Singapore	2,274	2,969	4,121	4,412	4,884
Hong Kong	5,895	6,825	8,899	8,994	9,474
Israel	1,209	1,300	1,809	2,201	2,505
Malaysia	1,959	2,205	2,825	2,399	2,534
India	1,522	2,334	2,737	2,478	2,465
Philippines	1,956	2,159	2,622	2,334	2,150
Indonesia	4,509	5,657	5,868	4,933	3,675
Australia and Oceania	3,501	3,354	3,885	4,170	4,080
Australia	2,552	2,422	2,899	3,069	2,873
Africa	18,537	15,206	14,996	12,543	11,057
Egypt	569	325	182	84	123
South Africa	2,048	2,099	2,577	2,180	2,476
Nigeria	7,274	3,883	2,606	3,108	2,681
Communist Countries in Asia	2,505	2,478	3,384	4,228	5,242
China	2,502	2,477	3,381	4,224	5,241
Eastern Europe	1,162	1,474	2,352	2,114	2,206
Soviet Union	247	374	600	443	606

*1986 figure includes Spain and Portugal.

Source: Department of Commerce

Table 45: U.S. Trade Balance with Major Trading Partners, 1982-1986

(in millions of dollars; exports f.a.s., imports c.i.f.)

	1982	1983	1984	1985	1986
Total	$-42,610	$-69,341	$-123,289	$-148,480	$-169,777
Western Hemisphere	-19,084	-32,157	-40,766	-40,252	-36,364
Canada	-13,072	-14,302	-20,387	-22,176	-23,330
Mexico	-3,953	-7,937	-6,275	-5,757	-5,167
Brazil	-1,220	-2,825	-5,633	-5,007	-3,455
Venezuela	249	-2,362	-3,443	-3,431	-2,305
Colombia	1,020	456	197	12	-720
Western Europe	5,252	-457	-16,902	-27,446	-32,655
United Kingdom	-2,896	-2,279	-2,834	-4,300	-4,614
West Germany	-3,212	-4,492	-8,726	-12,182	-15,568
Netherlands	5,952	4,618	3,224	2,901	3,485
France	1,295	-347	-2,479	-3,864	-3,370
Belgium-Luxembourg	2,727	2,539	2,014	1,351	1,208
Italy	-1,040	-1,911	-4,129	-5,756	-6,473
European Community*	3,466	-1,568	-13,291	-22,470	-26,366
Switzerland	313	408	-636	-1,291	-2,391
Spain	1,820	1,078	-66	-250	-341
Sweden	-403	-968	-1,885	-2,414	-2,766
Asia and Middle East	-26,100	-33,182	-63,158	-78,971	-96,031
Japan	-18,966	-21,665	-36,796	-49,749	-58,575
Korea	-482	-1,732	-4,044	-4,757	-7,142
Taiwan	-5,220	-7,443	-11,085	-13,061	-15,727
Saudi Arabia	1,166	4,063	1,555	2,447	-606
Singapore	940	790	-446	-936	-1,504
Hong Kong	-3,442	-4,261	-5,837	-6,208	-6,444
Israel	1,062	717	385	379	-267
Malaysia	-223	-521	-969	-860	-805
India	77	-506	-1,167	-836	-928
Philippines	-102	-352	-856	-955	-787
Indonesia	-2,484	-4,191	-4,652	-4,138	-2,730
Australia and Oceania	2,199	1,473	1,860	2,229	2,578
Australia	1,983	1,532	1,894	2,372	2,679
Africa	-8,266	-6,438	-6,169	-5,155	-5,079
Egypt	2,306	2,488	2,522	2,239	1,859
South Africa	320	30	-312	-975	-1,318
Nigeria	-5,979	-3,019	-2,029	-2,432	-2,272
Communist Countries in Asia	440	-284	-357	-352	-2,105
China	410	-304	-377	-368	-2,134
Eastern Europe	2,448	1,417	1,836	1,101	-216
Soviet Union	2,340	1,629	2,684	1,980	642

*1986 figure includes Spain and Portugal.

Source: Department of Commerce

Table 46: U.S. Exports by Commodity, 1982-1986

(in millions of dollars, f.a.s. value basis)

	1982	1983	1984	1985	1986
Total Exports*	$207,158	$195,969	$212,057	$206,925	$206,376
Agricultural Commodities	36,623	36,108	37,813	29,242	26,061
Nonagricultural Commodities	170,535	159,862	174,245	177,684	180,315
Food and Live Animals	23,950	24,166	24,463	19,268	17,303
Meat and Meat Products	1,285	1,191	1,208	1,153	1,424
Fish and Fish Products	995	917	850	1,016	1,297
Grain and Cereal Products	14,747	15,152	16,076	11,050	7,368
Wheat	6,676	6,235	6,477	3,601	3,010
Corn	5,683	6,480	7,081	5,319	2,718
Sorghum	720	731	880	839	389
Rice	997	926	845	665	621
Vegetables and Fruits	2,716	2,444	2,435	2,377	2,657
Animal Feeds	2,473	2,802	2,226	1,891	2,622
Beverages and Tobacco	3,026	2,813	2,849	2,958	2,920
Unmanufactured Tobacco	1,547	1,462	1,511	1,521	1,210
Cigarettes	1,235	1,126	1,120	1,180	1,298
Inedible Crude Materials	19,248	18,596	20,249	16,940	17,324
Hides and Skins	778	807	1,171	1,088	1,314
Soybeans	6,240	5,925	5,438	3,906	4,334
Rubber	553	543	624	584	649
Logs and Lumber	2,095	2.104	2,042	2,037	2,240
Paper Base Stocks	1,964	1,916	2,144	1,946	2,318
Raw Cotton	1,955	1,817	2,441	1,633	773
Steel Scrap	610	637	918	917	1,054
Nonferrous Ores and Scrap	1,413	1,456	1,508	1,534	1,543
Mineral Fuels	12,729	9,500	9,311	9,971	8,115
Bituminous Coal	5,934	4,008	4,090	4,398	3,862
Petroleum and Products	5,947	4,557	4,470	4,707	3,640
Animal and Vegetable Oils and Fats	1,541	1,459	1,922	1,434	1,015
Chemicals	19,891	19,751	22,336	21,759	22,766
Chemical Elements and Compounds	8,541	8,378	9,699	9,290	9,367
Organic Chemicals	5,440	5,326	6,093	6,012	6,293
Inorganic Chemicals	3,101	3,051	3,605	3,278	3,073
Pharmaceuticals	2,275	2,494	2,628	2,708	3,090
Fertilizers	1,386	1,267	1,815	2,160	1,935
Plastic Materials	3,650	3,732	4,050	3,777	4,301
Manufactured Goods Classified Chiefly by Material	16,739	14,852	15,140	14,009	14,005
Paper and Paper Products	2,653	2,553	2,620	2,329	2,602
Textiles (excl. clothing)	2,784	2,368	2,382	2,366	2,570
Nonmetallic Mineral Products	1,805	1,770	1,865	1,821	1,886
Steel Mill Products	2,101	1,415	1,248	1,152	1,020

(continued)

Table 46: U.S. Exports by Commodity, 1982-1986 (continued)

(in millions of dollars, f.a.s. value basis)

	1982	1983	1984	1985	1986
Nonferrous Metals and Alloys	$1,768	$1,606	$1,634	$1,472	$1,195
Aluminum and Alloys	1,026	1,010	990	937	816
Metal Manufactures	3,981	3,444	3,602	3,253	3,008
Machinery and Transport Equipment	87,148	82,578	89,973	94,278	95,290
Machinery	59,324	54,309	60,318	59,488	60,397
Power Generating Machinery	9,461	8,718	9,114	9,272	9,165
Aircraft Engines and Parts	2,570	2,788	3,011	3,316	3,694
Automotive Engines and Parts	1,955	2,082	2,410	2,494	2,269
Agricultural Machinery and Parts	2,389	1,589	1,740	1,601	1,421
Construction Equipment and Parts	1,254	766	761	820	714
Mining and Drilling Machinery and Parts	4,905	2,911	2,637	2,922	2,355
Textile and Sewing Machinery	554	453	520	498	554
Printing and Bookbinding Machinery and Parts	600	478	465	439	487
Metalworking Machinery	1,611	1,121	1,175	1,249	1,467
Heating and Cooling Machinery and Parts	2,291	1,854	1,888	1,791	1,740
Pumps and Parts	1,184	948	962	933	849
Centrifuges and Filtering and Purifying Machinery and Parts	774	734	628	537	515
Computers, Peripherals and Parts	9,007	10,453	13,352	13,841	14,514
Telecommunications Equipment	3,864	3,804	3,943	4,167	4,408
Other Electric Machinery and Parts	11,285	11,936	13,855	12,489	13,630
Electric Power Apparatus	2,434	2,379	2,790	2,616	2,800
Household Appliances	673	611	626	551	542
Transport Equipment	27,824	28,269	29,655	34,790	34,893
Cars	2,860	4,200	4,868	6,020	6,254
Trucks and Buses	1,765	1,411	1,686	2,183	2,257
Automotive Parts (excl. engines, tires and electrical parts)	3,039	3,254	3,994	9,376	8,492
Tractor Parts	1,156	972	1,146	1,085	866
Commercial Aircraft	4,848	5,691	4,147	6,694	7,366
Military Aircraft	2,388	1,845	1,581	2,012	1,502
Aircraft Parts	4,401	4,526	5,061	5,580	6,111
Rail Locomotives and Rolling Stock	433	402	584	427	538
Ships, Boats and Floating Structures	1,302	811	221	306	330
Miscellaneous Manufactured Goods	15,961	15,246	15,699	15,338	16,629
Furniture	639	593	622	560	534
Clothing	952	818	807	754	899
Professional, Scientific and Medical Equipment and Measuring and Controlling Instruments	6,003	5,856	6,198	6,505	6,732
Photographic Supplies	1,396	1,366	1,464	1,313	1,418
Printed Material	1,341	1,324	1,391	1,279	1,342
Toys and Sporting Goods	957	878	674	579	628
Musical Instruments and Parts	942	860	927	898	1,112
Unclassified Commodities	6,924	7,009	10,116	10,971	11,011

*Domestic merchandise only, including Department of Defense shipments.

Source: Department of Commerce

Table 47: U.S. Imports by Commodity, 1982-1986

(in millions of dollars, c.i.f. value basis)

	1982	1983	1984	1985	1986
Total Imports	$254,885	$269,878	$341,177	$361,626	$387,082
Agricultural Commodities	16,975	18,104	21,522	22,020	23,176
Nonagricultural Commodities	237,910	251,775	319,605	339,607	363,906
Food and Live Animals	15,731	16,692	19,428	20,292	22,395
Meat and Meat Products	2,303	2,241	2,232	2,472	2,601
Fish and Fish Products	3,292	3,764	3,859	4,202	4,933
Vegetables and Fruits	3,279	3,382	4,447	4,619	4,825
Sugar	934	1,113	1,333	1,002	717
Coffee	2,888	2,731	3,215	3,284	4,432
Beverages and Tobacco	3,666	3,710	4,007	4,124	4,226
Alcoholic Beverages	2,757	2,876	3,147	3,298	3,362
Inedible Crude Materials	9,302	10,272	11,882	11,167	11,176
Crude Rubber	607	731	915	746	691
Lumber	1,800	2,816	2,952	3,195	3,268
Paper Base Stocks	1,538	1,525	1,907	1,572	1,659
Iron Ore and Concentrates	589	531	628	561	549
Nonferrous Ores and Concentrates	1,760	1,449	1,775	1,418	1,140
Bauxite	1,275	1,116	1,350	1,071	875
Mineral Fuels	67,657	60,215	63,297	55,843	39,838
Petroleum and Products	61,552	54,358	58,167	51,471	36,550
Crude Petroleum	47,446	38,184	37,945	34,124	24,181
Petroleum Products	14,106	16,174	20,222	17,3481	12,369
Fuel Oil	8,774	9,410	10,907	8,100	5,879
Natural and Manufactured Gas	6,016	5,748	4,964	4,176	3,092
Animal and Vegetable Oils and Fats	446	541	742	730	581
Chemicals	9,935	11,305	14,401	15,321	15,804
Chemical Elements and Compounds	5,850	6,324	8,093	8,386	8,393
Organic Chemicals	3,109	3,646	4,489	4,833	4,968
Inorganic Chemicals	2,740	2,678	3,603	3,554	3,425
Pharmaceuticals	576	719	951	1,108	1,267
Fertilizers	1,015	1,056	1,221	1,049	953
Manufactured Goods Classified Chiefly by Material	34,997	36,750	49,018	49,499	51,700
Tires and Tubes	1,317	1,503	1,983	2,086	2,129
Plywood and Veneers	595	826	879	905	994
Paper and Paper Products	3,954	4,362	5,822	6,248	6,630
Newsprint	2,803	2,817	3,370	3,720	3,760
Textiles (excl. clothing)	3,000	3,460	4,874	5,274	6,151
Cotton Fabrics	511	594	935	892	1,064
Glass, Glassware and Tableware	1,467	1,744	2,176	2,406	2,699
Gem Diamonds	1,926	2,283	2,917	3,020	3,476

(continued)

Table 47: U.S. Imports by Commodity, 1982-1986 (continued)

(in millions of dollars, c.i.f. value basis)

	1982	1983	1984	1985	1986
Steel Mill Products	$9,918	$6,919	$11,146	$10,614	$8,900
Wire Rods and Bars	1,599	1,433	2,053	1,963	1,758
Plates and Sheets	2,774	3,265	4,958	4,615	4,170
Tubes, Pipes and Fittings	4,778	1,497	2,882	2,671	1,732
Nonferrous Metals and Alloys	5,420	7,545	8,350	7,172	7,881
Precious Metals	1,305	2,642	1,916	1,834	1,951
Copper and Alloys	1,023	1,382	1,570	1,195	1,428
Nickel and Alloys	575	533	608	614	522
Aluminum and Alloys	1,364	1,668	2,522	2,066	2,833
Metal Manufactures	4,585	4,807	6,347	7,022	7,575
Machinery and Transport Equipment	75,723	88,928	123,104	141,721	166,240
Machinery	40,564	48,409	70,657	77,717	90,101
Power Generating Machinery	4,621	5,384	7,465	9,051	9,997
Agricultural Machinery and Tractors	1,073	1,237	1,577	1,499	1,648
Textile and Sewing Machinery	958	1,098	1,336	1,155	1,502
Metalworking Machinery	1,955	1,540	2,116	2,886	3,385
Office Machinery and Computers	4,412	6,979	11,175	11,917	15,114
Telecommunications Equipment	9,288	11,619	16,423	19,114	21,157
Radio Sets	736	864	1,056	1,025	870
Television Sets	1,462	1,788	2,246	2,327	2,762
Stereo Equipment and Audio and Video Cassette Recorders	2,090	2,756	4,369	6,038	6,827
Other Electric Machinery and Parts	10,525	12,828	18,789	18,192	20,718
Transport Equipment	35,159	40,519	52,447	64,003	76,140
Road Motor Vehicles	26,025	29,817	37,830	47,009	56,275
Cars	20,568	23,757	30,147	37,617	46,555
Automotive Parts (excl. engines, tires and electrical parts)	4,486	6,441	9,059	10,568	12,245
Motorcycles and Parts	1,176	838	772	1,014	961
Aircraft and Parts	2,511	2,073	3,033	3,600	4,525
Miscellaneous Manufactured Goods	29,631	33,637	45,361	51,684	60,079
Clothing	8,703	10,292	14,513	16,056	18,554
Footwear	3,671	4,291	5,424	6,104	6,857
Professional, Scientific and Controlling Instruments	1,735	1,963	2,770	3,298	3,987
Clocks and Watches	1,015	1,089	1,294	1,406	1,576
Printed Matter	701	778	1,041	1,175	1,446
Toys and Sporting Goods	2,978	2,702	3,700	4,451	5,088
Art Works and Antiques	2,040	2,033	2,489	2,217	2,123
Unclassified Commodities	7,798	7,830	9,938	11,245	15,042

Source: Department of Commerce

Table 48: U.S. Trade with Japan, 1982-1986

(in millions of dollars, seasonally unadjusted)

		Exports* (f.a.s.)	Change Over Year-Earlier Period	Imports (Customs)	Change Over Year-Earlier Period	Trade Balance	Imports (c.i.f.)	Change Over Year-Earlier Period	Trade Balance
1982		$20,966	-3.9%	$37,744	0.4%	$-16,778	$39,932	0.1%	$-18,966
1983		21,894	4.4	41,183	9.1	-19,289	43,559	9.1	-21,665
1984		23,575	7.7	57,135	38.7	-33,560	60,371	38.6	-36,796
1985		22,631	-4.0	68,783	20.4	-46,152	72,380	19.9	-49,749
1986		26,882	18.8	81,911	19.1	-55,030	85,457	18.1	-58,575
1985	January	2,100	13.3	5,969	29.4	-3,869	6,279	28.7	-4,179
	February	1,824	0.6	4,800	32.1	-2,976	5,063	31.8	-3,239
	March	2,329	14.8	5,725	20.3	-3,396	6,030	20.0	-3,701
	April	1,733	-7.5	5,931	27.9	-4,198	6,235	26.9	-4,502
	May	1,814	-8.7	5,719	17.0	-3,905	6,024	16.6	-4,210
	June	1,751	-13.8	5,824	29.3	-4,073	6,153	29.3	-4,402
	July	1,845	-14.5	5,418	-13.5	-3,573	5,708	-13.7	-3,863
	August	1,743	-8.6	5,444	7.1	-3,701	5,721	6.4	-3,978
	September	1,926	8.9	6,452	30.6	-4,526	6,787	30.3	-4,861
	October	1,834	-2.0	5,237	3.2	-3,403	5,496	2.6	-3,662
	November	1,972	-8.0	6,043	31.7	-4,071	6,342	30.9	-4,370
	December	1,761	-17.8	6,222	49.9	-4,461	6,541	49.0	-4,780
1986	January	1,763	-16.0	6,902	15.6	-5,139	7,227	15.1	-5,464
	February	1,813	-0.6	5,861	22.1	-4,048	6,143	21.3	-4,330
	March	1,998	-14.2	7,185	25.5	-5,187	7,518	24.7	-5,520
	April	1,906	10.0	6,333	6.8	-4,427	6,609	6.0	-4,703
	May	1,732	-4.5	6,439	12.6	-4,707	6,725	11.6	-4,993
	June	3,861	120.5	7,240	24.3	-3,379	7,551	22.7	-3,690
	July	2,941	59.4	8,102	49.5	-5,161	8,446	48.0	-5,505
	August	2,272	30.3	6,694	23.0	-4,422	6,973	21.9	-4,701
	September	2,015	4.6	5,884	-8.8	-3,869	6,135	-8.6	-4,120
	October	2,286	24.6	6,996	33.6	-4,710	7,268	32.2	-4,982
	November	1,990	0.9	8,392	38.9	-6,402	8,731	37.7	-6,741
	December	2,305	30.9	5,883	-5.4	-3,578	6,130	-6.3	-3,825

*Domestic and foreign merchandise, including Department of Defense shipments.

Source: Department of Commerce

Table 49: U.S. Exports to Japan by Commodity, 1982-1986

(in millions of dollars, f.a.s. value basis)

	1982	1983	1984	1985	1986
Total Exports to Japan*	$20,665	$21,520	$23,094	$22,042	$23,153
Agricultural Commodities	5,547	6,241	6,757	5,394	5,088
Nonagricultural Commodities	15,118	15,279	16,337	16,648	18,065
Food and Live Animals	3,944	4,294	4,705	4,011	4,144
Meat and Meat Products	530	574	571	541	761
Fish and Fish Products	600	506	503	685	864
Grain and Cereal Products	2,107	2,493	2,873	2,044	1,500
Wheat	564	589	534	469	424
Corn	1,290	1,764	1,999	1,305	878
Sorghum	208	86	270	243	178
Vegetables and Fruits	401	419	453	452	584
Animal Feeds	140	159	173	161	233
Beverages and Tobacco	400	442	399	417	390
Unmanufactured Tobacco	310	339	286	302	227
Cigarettes	67	80	95	95	128
Inedible Crude Materials	4,054	4,185	4,452	3,951	4,068
Hides and Skins	228	240	325	298	331
Soybeans	971	1,210	1,173	938	839
Synthetic Rubber	49	47	57	51	66
Logs and Lumber	1,045	900	841	885	1,097
Paper Base Stocks	488	485	528	476	568
Raw Cotton	501	500	605	368	239
Steel Scrap	145	218	265	199	170
Nonferrous Ores and Scrap	367	309	364	460	492
Mineral Fuels	2,440	1,994	1,812	1,782	1,311
Bituminous Coal	1,525	1,002	865	769	555
Petroleum Products	621	639	683	762	568
Animal and Vegetable Oils and Fats	83	62	53	51	50
Chemicals	2,530	2,607	2,961	2,908	3,081
Chemical Elements and Compounds	1,303	1,308	1,553	1,506	1,616
Organic Chemicals	665	674	717	704	732
Inorganic Chemicals	638	634	836	802	884
Pharmaceuticals	489	521	553	570	633
Fertilizers	96	110	122	124	99
Plastic Materials	308	345	372	324	336

(continued)

Table 49: U.S. Exports to Japan by Commodity, 1982-1986 (continued)

(in millions of dollars, f.a.s. value basis)

	1982	1983	1984	1985	1986
Manufactured Goods Classified Chiefly by Material	$1,320	$1,360	$1,403	$1,244	$1,291
Paper and Paper Products	263	294	294	295	361
Textiles (excl. clothing)	106	98	113	108	122
Nonmetallic Mineral Products	117	136	152	150	194
Iron and Steel	46	42	63	48	52
Nonferrous Metals and Alloys	447	413	379	289	206
Copper and Alloys	10	24	119	16	8
Aluminum and Alloys	416	375	226	258	188
Metal Manufactures	174	191	207	174	194
Machinery and Transport Equipment	4,090	4,794	5,223	5,751	6,221
Machinery	3,015	3,251	3,897	3,805	4,085
Power Generating Machinery	331	517	617	444	497
Aircraft Engines and Parts	177	180	218	295	357
Mining and Drilling Machinery and Parts	254	89	70	69	61
Metalworking Machinery	90	68	77	84	122
Heating and Cooling Machinery and Parts	78	80	79	91	87
Centrifuges and Filtering and Purifying Machinery and Parts	62	58	48	49	53
Computers, Peripherals and Parts	776	833	1,057	1,250	1,301
Telecommunications Equipment	174	208	206	241	312
Other Electric Machinery and Parts	618	738	930	824	961
Electric Power Apparatus	121	141	173	163	178
Transport Equipment	1,075	1,543	1,327	1,946	2,137
Road Motor Vehicles and Parts	148	145	191	214	271
Automotive Parts (excl. engines, tires and electrical parts)	24	36	34	130	143
Aircraft and Parts	906	1,345	1,073	1,710	1,826
Commercial Aircraft	421	835	541	906	1,161
Aircraft Parts	468	498	519	574	654
Miscellaneous Manufactured Goods	1,410	1,367	1,479	1,483	1,801
Clothing	65	44	43	34	46
Professional, Scientific and Medical Equipment and Measuring and Controlling Instruments	549	583	645	691	736
Photographic Supplies	202	221	225	219	267
Printed Material	52	55	66	60	64
Toys and Sporting Goods	162	114	89	80	98
Musical Instruments and Parts	85	82	91	93	137
Unclassified Commodities	96	121	204	258	535

*Domestic merchandise only, including Department of Defense shipments.

Source: Department of Commerce

Table 50: U.S. Imports from Japan by Commodity, 1982-1986

(in millions of dollars, c.i.f. value basis)

	1982	1983	1984	1985	1986
Total Imports from Japan	$39,932	$43,559	$60,371	$72,380	$85,457
Agricultural Commodities	142	186	243	269	291
Nonagricultural Commodities	39,789	43,373	60,129	72,111	85,166
Food and Live Animals	301	366	436	488	476
Fish and Fish Products	206	236	265	297	276
Beverages and Tobacco	19	28	39	39	46
Inedible Crude Materials	62	81	94	120	113
Mineral Fuels	23	12	59	67	75
Animal and Vegetable Oils and Fats	6	7	8	9	12
Chemicals	937	1,172	1,403	1,506	1,896
Chemical Elements and Compounds	496	584	673	731	902
Organic Chemicals	391	459	548	599	772
Inorganic Chemicals	105	125	125	132	130
Pharmaceuticals	70	84	78	87	127
Manufactured Goods Classified Chiefly by Material	7,348	5,667	7,872	8,222	7,384
Tires and Tubes	415	455	583	630	635
Paper and Paper Products	59	78	99	130	163
Textiles (excl. clothing)	557	620	717	764	908
Yarn	54	73	93	77	91
Cotton Fabrics	58	70	119	152	173
Other Fabrics	322	347	350	362	455
Glass, Glassware and Tableware	385	452	532	580	596
Steel Mill Products	3,855	2,117	3,453	3,344	2,454
Wire Rods and Bars	442	376	553	506	384
Plates and Sheets	832	1,103	1,739	1,564	1,329
Tubes, Pipes and Fittings	2,410	462	864	971	506
Nonferrous Metals and Alloys	327	411	531	561	532
Copper and Alloys	83	113	121	115	130
Aluminum and Alloys	185	233	346	363	347
Metal Manufactures	1,447	1,179	1,457	1,689	1,642

(continued)

Table 50: U.S. Imports from Japan by Commodity, 1982-1986 (continued)

(in millions of dollars, c.i.f. value basis)

	1982	1983	1984	1985	1986
Machinery and Transport Equipment	$27,169	$31,783	$44,662	$54,842	$67,266
Machinery	12,785	15,924	25,535	29,642	34,699
Power Generating Machinery	749	880	1,332	1,510	2,016
Agricultural Machinery and Tractors	196	246	373	422	510
Textile and Sewing Machinery	166	205	258	257	329
Metalworking Machinery	768	641	937	1,306	1,550
Office Machinery and Computers	2,176	3,389	5,454	5,843	7,551
Telecommunications Equipment	4,818	5,856	9,125	11,549	12,684
Radio Sets	263	254	295	316	279
Television Sets	442	435	706	851	890
Stereo Equipment and Audio and Video Cassette Recorders	1,747	2,400	3,839	5,368	5,961
Other Electric Machinery and Parts	2,276	3,026	5,079	4,915	5,646
Transport Equipment	14,384	15,859	19,127	25,200	32,567
Road Motor Vehicles	12,269	13,756	16,244	21,669	27,891
Cars	9,834	10,963	13,038	17,126	22,011
Automotive Parts (excl. engines, tires and electrical parts)	616	931	1,622	2,125	3,260
Motorcycles and Parts	1,125	785	699	940	891
Aircraft and Parts	167	143	133	134	176
Miscellaneous Manufactured Goods	3,641	4,069	5,383	6,327	7,342
Clothing	269	361	527	519	491
Professional, Scientific and Controlling Instruments	435	531	794	977	1,159
Clocks and Watches	312	343	447	490	487
Printed Matter	92	108	148	166	213
Toys and Sporting Goods	484	322	416	592	555
Unclassified Commodities	425	374	416	760	849

Source: Department of Commerce

Table 51: U.S. Exports to Japan by End-Use Classification, 1985 and 1986

(in millions of dollars, f.a.s. value basis, and indicated quantity units)

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Exports 1986
Total Exports			$22,630.8	$26,881.6	18.8%	12.4%
Industrial Supplies			8,679.9	8,751.5	0.8	15.2
Bituminous Coal	15,370,720 stn	11,369,424 stn	769.1	544.7	-27.9	14.4
Coking Coal	13,903,308 stn	10,478,546 stn	712.9	518.9	-27.2	19.7
Steam Coal	1,467,412 stn	890,878 stn	56.2	35.8	-36.3	2.9
Petroleum Products			762.0	567.7	-25.5	21.9
Gasoline	220,584 bbl	4,539,690 bbl	7.0	79.0	1,028.6	28.2
Light Fuel Oils	2,534,194 bbl	5,720,741 bbl	74.8	115.4	54.3	20.3
Heavy Fuel Oils	17,423,590 bbl	9,315,609 bbl	432.6	132.1	-69.5	19.0
Petroleum Coke (excl. calcined)	3,456,521 stn	3,440,614 stn	157.2	119.2	-24.2	24.2
Natural Gas	54,174,547 mcf	52,670,591 mcf	249.1	187.0	-24.9	99.0
Nuclear Reactor Fuels			121.5	28.7	-76.4	12.3
Logs and Lumber	2,523,343 mbf	2,958,691 mbf	884.9	1,097.4	24.0	49.0
Logs	1,899,035 mbf	2,076,718 mbf	682.2	788.9	15.6	64.3
Douglas-fir Logs	1,019,640 mbf	1,216,461 mbf	361.7	451.0	24.7	79.3
Western Hemlock Logs	679,058 mbf	621,822 mbf	209.5	198.8	-5.1	55.4
Lumber	624,308 mbf	881,973 mbf	202.7	308.5	52.2	31.2
Paper Base Stocks			470.2	563.8	19.9	24.8
Wood Chips	2,169,430 stn	2,115,988 stn	160.6	154.3	-3.9	90.8
Wood Pulp	752,901 stn	948,591 stn	277.6	359.3	29.4	21.6
Paper and Paper Products			288.9	354.0	22.5	14.3
Newsprint	181,412 stn	194,127 stn	81.6	123.2	51.0	63.3
Kraft Linerboard	150,149 stn	166,110 stn	38.5	50.1	30.1	7.9
Coated Container Base Stock	137,127 stn	143,604 stn	97.5	102.7	5.3	49.5
Chemicals (excl. plastics, fertilizers and insecticides)			1,513.2	1,726.4	14.1	15.3
Cyclic Hydrocarbons			59.2	57.1	-3.5	10.0
Cyclic Organic Intermediate Chemical Compounds			143.2	159.9	11.7	11.7
Alcohols, Phenols and Their Derivatives			57.5	67.3	17.0	32.1
Acyclic Organic Chemical Products			350.0	346.3	-1.1	14.5
Ethylene Dichloride	328,939 stn	162,392 stn	58.8	32.0	-45.6	56.8
Uranium and Thorium Compounds	776 stn	798 stn	437.5	600.2	37.2	56.7
Sodium Compounds			51.1	53.4	4.5	8.1
Antiknock Compounds and Additives for Lubricating Oils			67.5	58.6	-13.2	8.2
Fertilizers and Fertilizer Materials			n.a.	99.1	n.a.	5.1
Unmixed Pesticides			66.1	80.6	21.9	10.6
Manufactured Pesticides			60.0	66.7	11.2	10.0
Plastic and Synthetic Resin Compounds			305.6	322.0	5.4	8.1
Film, Strips and Sheets			47.0	54.5	16.0	8.3
Synthetic Rubber			51.0	65.8	29.0	10.1
Steel Scrap	2,110,087 stn	1,725,068 stn	199.1	170.0	-14.6	16.1
Nonferrous Ores and Scrap			459.6	491.8	7.0	31.9
Copper Ore	113,354 stn	145,104 stn	108.9	141.3	29.8	75.2
Aluminum Scrap	290,591 stn	264,115 stn	243.7	223.8	-8.2	68.2
Platinum and Platinum Group Metals	185,665 toz	108,312 toz	62.7	29.9	-52.3	30.4
Aluminum and Aluminum Alloys			257.7	188.4	-26.9	23.1
Aluminum Ingot	218,620 stn	144,849 stn	239.2	161.7	-32.4	57.2
Gold	84,667 toz	569,906 toz	25.7	243.9	849.0	13.9
Iron and Steel (incl. ferroalloys)			48.4	51.7	6.8	4.8

(continued)

Table 51: U.S. Exports to Japan by End-Use Classification, 1985 and 1986 (continued)

(in millions of dollars, f.a.s. value basis, and indicated quantity units)

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Exports 1986
Unmanufactured Nonmetallic Minerals			$104.8	$111.5	6.4%	14.5%
Kaolin Clay	437,244 stn	455,408 stn	60.2	65.3	8.5	30.6
Manufactured Mineral Supplies			111.1	128.0	15.2	9.4
Industrial Textile Fibers, Yarns and Fabrics			69.3	74.1	6.9	2.9
Raw Cotton	1,065,454 rba	784,735 rba	368.0	238.6	-35.2	30.9
Hides and Skins			298.2	331.4	11.1	25.2
Whole Cattle Hides	6,824,464 pc	6,624,385 pc	276.1	302.2	9.4	25.2
Leaf Tobacco	51,002 stn	40,736 stn	302.4	227.1	-24.9	18.8
Stemmed Flue-Cured Leaf	31,897 stn	22,192 stn	211.3	148.4	-29.8	23.2
Stemmed Burley Leaf	11,266 stn	12,681 stn	83.2	74.5	-10.5	27.8
Capital Goods			5,938.6	6,727.5	13.3	6.8
Nonelectric Machinery			3,384.7	3,561.7	5.2	7.9
Data Processing Equipment			1,331.1	1,400.6	5.2	9.2
Computers			383.2	404.2	5.5	11.6
Peripheral Equipment and Parts			866.7	897.1	3.5	8.1
Disk and Tape Storage Units			74.4	104.1	39.9	8.3
Parts			585.3	592.7	1.3	8.3
Magnetic Computer Disks and Tapes			38.8	67.1	72.9	15.4
Semiconductor Production and Assembly Equipment and Parts			276.4	155.8	-43.6	19.0
Measuring, Testing and Controlling Instruments and Parts			553.2	581.1	5.0	11.9
Chemical Analysis Equipment and Parts			59.7	56.3	-5.7	10.6
Physical Analysis Equipment and Parts			50.5	52.7	4.4	11.5
Equipment for Testing Electrical Circuits and Parts			216.5	258.0	19.2	19.0
Scientific, Professional and Medical Equipment			265.5	337.0	26.9	13.5
Electromedical and Electrotherapeutic Apparatus and Parts			117.5	149.9	27.6	14.3
Power Generating Equipment (excl. aircraft and automotive engines)			73.3	77.1	5.2	4.2
Nonfarm Tractors, Parts and Attachments			52.4	63.4	21.0	4.5
Parts and Accessories for Oilfield and Gasfield Drilling Equipment			63.1	55.7	-11.7	2.7
Machine Tools and Parts			59.8	83.3	39.3	9.4
Pumps and Compressors			49.1	51.6	5.1	3.9
Equipment for Service Industries			120.1	143.7	19.7	7.0
Electric Machinery			804.3	977.5	21.5	6.6
Semiconductors			235.1	294.3	25.2	6.0
Integrated Circuits			130.6	144.6	10.7	12.6
Chips, Dice and Wafers			75.7	107.0	41.3	4.0
Telephone Equipment and Parts			38.9	72.3	85.9	10.1
Radar Apparatus (excl. for planes and boats) and Parts			70.8	92.2	30.2	16.4
Parts			67.7	84.9	25.4	19.3
Generators, Transformers and Accessories			75.9	73.7	-2.9	5.0
Transportation Equipment			1,749.6	2,188.3	25.1	5.7
Civilian Aircraft			905.9	1,161.3	28.2	15.8
Passenger, Cargo and Combination Jet Transports	17 ut	17 ut	886.4	1,130.3	27.5	18.0
Civilian Aircraft Engines, Parts and Accessories			552.1	659.6	19.5	8.8
Jet Turbines			50.3	37.9	-24.7	4.0
Jet Engine Parts			185.0	230.3	24.5	12.2
Parts for Civilian Aircraft			270.2	340.4	26.0	8.9
Automotive Parts, Engines and Bodies			214.8	235.0	9.4	1.8

(continued)

Table 51: U.S. Exports to Japan by End-Use Classification, 1985 and 1986 (continued)

(in millions of dollars, f.a.s. value basis, and indicated quantity units)

Commodity	Quantity		Value		Percent Change	Japan's Share of U.S. Exports
	1985	1986	1985	1986	1985/86	1986
Food and Feed			$5,000.7	$5,042.8	0.8%	22.7%
Corn (excl. seed and popcorn)	432,179,039 bu	361,006,823 bu	1,292.6	866.0	-33.0	33.3
Sorghum (excl. seed)	95,506,830 bu	84,437,152 bu	240.9	177.3	-26.4	48.9
Soybeans (excl. seed)	157,900,636 bu	151,441,602 bu	937.0	837.2	-10.7	19.4
Animal Feeds			161.2	232.7	44.4	8.9
Dried Beet Pulp	359,546 stn	454,878 stn	43.9	55.1	25.5	74.3
Alfalfa Hay Cubes	441,397 stn	597,935 stn	56.8	77.5	36.4	93.2
Wheat	114,652,413 bu	118,472,413 bu	469.0	424.3	-9.5	14.4
Fruits and Vegetables			452.1	584.0	29.2	22.0
Lemons	120,988 stn	135,352 stn	77.2	83.0	7.5	87.9
Grapefruit	118,701 stn	172,178 stn	51.5	74.1	43.9	55.5
Oranges and Tangerines	119,097 stn	123,622 stn	73.3	68.5	-6.5	29.4
Fresh Non-Citrus Fruit			33.7	50.1	48.7	13.1
Almonds			45.3	89.7	98.0	21.3
Frozen Vegetables			61.0	84.2	38.0	68.0
Meat and Meat Products			540.8	760.9	40.7	53.4
Fresh and Frozen Beef	91,012 stn	122,334 stn	340.6	470.7	38.2	77.7
Fresh and Frozen Beef Offals	40,133 stn	53,029 stn	76.1	119.4	56.9	41.6
Fresh and Frozen Pork	10,118 stn	13,176 stn	32.7	52.3	59.9	74.0
Fresh and Frozen Poultry	51,158 stn	85,323 stn	57.3	91.2	59.2	31.2
Fish and Fish Products			685.4	864.2	26.1	66.7
Fresh and Frozen Whole Salmon	113,657 stn	108,482 stn	384.9	445.6	15.8	81.6
Fresh and Frozen Whole Herring	37,245 stn	31,907 stn	54.7	46.8	-14.4	70.8
Fish Roe	14,042 stn	13,753 stn	99.5	87.6	-12.0	84.6
Frozen Snow Crab	9,691 stn	12,091 stn	33.1	62.3	88.2	84.7
Consumer Goods			1,415.5	1,689.9	19.4	12.0
Pharmaceuticals			590.5	647.4	9.6	19.9
Bulk Antibiotics			167.7	196.4	17.1	25.5
Bulk Cardiovascular Drugs			15.1	51.1	238.4	19.0
Blood and Blood Derivatives			161.5	170.2	5.4	37.0
Cigarettes	322,756,950 pk	481,915,900 pk	94.9	128.0	34.9	9.9
Toys and Sporting Goods			85.7	108.9	27.1	13.0
Still Film in Cartridges and Rolls	39,890,112 ut	28,535,398 ut	57.4	47.2	-17.8	31.5
Gem Diamonds and Other Gem Stones			50.3	96.3	91.5	16.5
Works of Art			34.8	64.3	84.8	18.9
Printed Material			59.7	63.5	6.4	4.7
Miscellaneous			1,595.9	4,669.9	192.6	18.8
Military-Type Goods			439.0	261.8	-40.4	6.0
Other Domestic Exports			568.2	679.1	19.5	7.1
Military Aircraft Engine Parts			334.2	388.3	16.2	14.9
Re-exports			588.8	3,729.0	533.3	34.1
Bullion	0 toz	6,755,228 toz	0.0	3,095.5	--	84.2

Key to quantity abbreviations:

bbl = barrels
bu = bushels
mbf = thousand board feet
mcf = thousand cubic feet
pc = pieces
pk = packs
rba = running bales
stn = short tons
toz = troy ounces
ut = units

Source: Department of Commerce

Table 52: U.S. Imports from Japan by End-Use Classification, 1985 and 1986

(in millions of dollars, Customs value basis, and indicated quantity units)

Commodity	Quantity		Value		Percent Change 1985/86	Japan's Share of U.S. Imports 1986
	1985	1986	1985	1986		
Total Imports			$68,782.9	$81,911.1	19.1%	22.1%
Automotive Products			24,980.0	32,849.1	31.5	41.8
Cars	2,527,467 no	2,618,709 no	16,231.3	21,060.1	29.7	46.5
Assembled Trucks	803,965 no	975,613 no	3,408.6	4,807.3	41.0	60.3
Truck Bodies (incl. cabs)	6,228 no	9,772 no	49.7	97.3	95.8	55.2
Automotive Parts, Accessories and Engines			4,429.5	6,065.6	36.9	26.7
Body Stampings			155.5	197.9	27.3	58.7
Wheels			71.1	109.3	53.7	27.0
Brakes and Parts			66.8	92.6	38.6	13.0
Transmissions			252.2	513.1	103.4	33.5
Engines and Parts			652.4	885.4	35.7	21.2
Engines	576,472 no	653,191 no	463.7	638.7	37.7	21.4
Parts			188.8	246.8	30.7	20.9
Starting and Ignition Equipment			165.9	243.4	46.7	42.3
Ignition Wiring Sets			38.9	76.5	96.7	8.9
Pumps			54.9	78.7	43.4	29.4
Tires			467.2	475.6	1.8	29.0
Car Tires	8,027,564 no	8,496,980 no	207.7	243.0	17.0	26.7
Truck and Bus Tires	2,539,960 no	2,113,340 no	259.5	232.6	-10.4	31.9
Furniture			61.9	102.8	66.1	13.5
Golf Carts, Mopeds and Similar Vehicles	743,539 no	456,580 no	726.3	656.9	-9.6	93.9
Capital Goods			21,515.7	25,333.9	17.7	33.2
Nonelectric Machinery			14,448.9	17,230.9	19.3	36.7
Business Machines			6,274.1	7,901.9	25.9	47.6
Manual Office Typewriters	331,842 no	419,755 no	72.2	71.2	-1.4	54.2
Electric Office Typewriters	61,752 no	607,664 no	29.4	144.2	390.5	66.6
Calculators	20,431,856 no	16,154,418 no	278.3	197.9	-28.9	62.4
Cash Registers (excl. point-of-sale units)	431,156 no	424,766 no	108.3	100.4	-7.3	97.6
Office Copying Machines and Parts			966.5	1,283.3	32.8	90.8
Copying Machines	775,972 no	856,654 no	721.7	922.6	27.8	92.5
Parts			244.9	360.7	47.3	86.7
Microfilm and Microfiche Reader-Printers	121,704 no	102,838 no	171.1	129.5	-24.3	65.1
Data Processing Equipment and Parts			3,233.6	4,703.0	45.4	42.7
Data Processing Equipment			1,924.9	2,781.1	44.5	50.2
Parts			1,308.7	1,921.9	46.9	35.1
Telephone Answering Machines and Office Recording and Transcribing Machines (except battery-operated)			106.5	136.0	27.7	46.7
Machine Tools and Parts			975.8	1,272.8	30.4	47.5
Numerically Controlled Lathes	3,765 no	3,888 no	220.3	228.0	3.5	77.4
Machining Centers	3,860 no	3,299 no	306.7	313.8	2.3	85.4
Punching and Shearing Machines	1,611 no	1,801 no	70.2	95.5	36.0	54.1
Parts			109.9	110.3	0.4	25.6
Casting Machines Used in Metallurgy and Parts			112.5	62.0	-44.9	54.2
Farm Tractors	72,264 no	69,266 no	280.5	314.0	11.9	44.5
Under 40 Horsepower	58,807 no	52,000 no	214.7	238.0	10.9	86.4

(continued)

Table 52: U.S. Imports from Japan by End-Use Classification, 1985 and 1986 (continued)

(in millions of dollars, Customs value basis, and indicated quantity units)

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Imports 1986
Hydraulic Excavators and Parts			$508.1	$504.4	-0.7%	34.4%
Backhoes, Shovels, Clamshells and Draglines	3,245 no	5,200 no	138.1	235.6	70.6	52.2
Parts			122.9	127.8	4.0	21.0
Front-End Loaders	4,742 no	5,682 no	208.1	192.0	-7.7	32.2
Forklifts and Other Self-Propelled Work Trucks and Parts	34,426 no	31,264 no	274.1	300.5	9.6	44.7
Other Materials Handling Equipment and Parts			180.2	243.6	35.2	23.2
Textile Machinery and Parts			176.2	237.8	35.0	21.9
Commercial Sewing Machines	181,795 no	214,717 no	59.7	100.6	68.5	71.9
Printing Equipment and Parts			181.3	256.8	41.6	28.2
Sheet-Fed Offset Printing Presses	420 no	461 no	73.9	105.0	42.1	31.9
Roll-Fed Offset Printing Presses	57 no	116 no	51.7	73.5	42.2	52.9
Machinery and Parts for Making Plastics and Rubber			105.1	161.5	53.7	28.1
Injection Molding Machinery	909 no	1,229 no	50.9	99.3	95.1	44.5
Airconditioning Machinery and Parts			168.9	214.7	27.1	62.7
Pumps (except for motor vehicles) and Parts			74.2	77.7	4.7	12.1
Compressors and Parts			344.9	392.8	13.9	53.1
Refrigeration and Airconditioning Compressors Over 1 Horsepower	3,114,718 no	3,461,733 no	153.7	206.3	34.2	88.5
Fans and Blowers (except for motor vehicles) and Parts			64.7	77.8	20.2	13.0
Power Hand Tools			187.6	192.1	2.4	44.5
Electric Hand Tools			135.0	202.8	50.2	61.8
Tools for Hand or Machine Use			162.4	173.3	6.7	22.2
Bearings and Parts			299.4	290.3	-3.0	43.8
Radial Ball Bearings			119.7	104.9	-12.4	43.0
Tapered Roller Bearings and Parts			100.8	94.4	-6.3	73.2
Taps, Cocks, Valves and Similar Devices and Parts			186.9	235.4	25.9	22.4
Small Stationary Diesel Engines and Parts			110.7	135.3	22.2	26.3
Small Stationary Gas Engines and Parts			161.1	227.7	41.3	66.1
Electromedical Apparatus and Parts			151.9	206.3	35.8	30.1
X-Ray Apparatus and Parts			85.7	100.8	17.6	16.6
Medical, Dental and Veterinary Instruments and Parts			154.5	203.4	31.7	35.0
Optical Instruments (excl. electro-optical)			88.4	132.5	49.9	76.5
Telescopes and Binoculars	6,525,630 no	4,128,265 no	110.8	103.8	-6.3	2.5
Microscopes and Parts			64.4	78.8	22.4	48.6
Nonelectric Measuring and Testing Instruments and Parts			163.5	154.3	-5.6	23.9
Electric Measuring and Testing Instruments and Parts			403.4	485.9	20.5	26.6
Instruments for Measuring Liquids and Gases			56.8	80.1	41.0	28.4
Instruments for Measuring Electrical Quantities			119.4	112.7	-5.6	43.4
Film Processing and Printing Equipment			106.4	160.1	50.5	65.5
Magnetic Media			761.6	863.0	13.3	62.6
Blank Audio Cassettes	70,235,346 no	67,536,899 no	80.7	71.1	-11.9	47.6
Blank Video Cassettes	123,539,802 no	142,968,638 no	397.5	461.4	16.1	63.9
Other Blank Video Recording Media			131.8	148.0	12.3	89.0
Nonferrous Metal Buildings and Other Structures			48.4	129.4	167.4	44.1
Electric Machinery			6,542.6	7,532.5	15.1	34.9
Semiconductors			1,205.7	1,275.5	5.8	22.4
Discrete Devices			326.3	347.0	6.3	28.3
Transistor Parts			217.9	232.9	6.9	38.2

(continued)

Table 52: U.S. Imports from Japan by End-Use Classification, 1985 and 1986 (continued)

(in millions of dollars, Customs value basis, and indicated quantity units)

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Imports 1986
Integrated Circuits			$879.4	$928.5	5.6%	20.8%
Digital Bipolar Chips			93.2	126.1	35.3	11.7
Digital Metal Oxide on Silicon Chips	201,655,545 no	296,194,229 no	699.8	694.4	-0.8	28.8
Chips, Dice and Wafers			119.8	116.1	-3.1	43.1
Printed Circuit Boards	9,359,894 no	12,287,199 no	81.0	131.2	62.0	33.7
Capacitors			121.2	137.4	13.4	36.5
Microphones, Loudspeakers and Amplifers and Parts			589.2	544.4	-7.6	56.9
Loudspeakers	45,921,410 no	40,127,085 no	256.9	245.4	-4.5	61.6
Audiofrequency Amplifiers	3,193,381 no	2,337,589 no	212.2	182.4	-14.0	66.8
Television Cameras and Parts	791,827 no	510,200 no	425.0	383.2	-10.0	94.1
Radio Transceivers (excl. citizens' band)	618,314 no	541,781 no	129.6	112.4	-13.3	42.1
Radar and Radio Navigational Aids and Parts			67.5	91.9	36.1	26.7
Radiotelephonic Apparatus and Parts			279.9	308.8	10.3	32.0
Telephone Apparatus and Parts			735.2	756.7	2.9	42.0
Telephone Switching Equipment and Parts			205.2	162.8	-20.7	40.4
Telephone Instruments and Parts			404.3	363.6	-10.1	38.6
Telegraph Apparatus and Instruments and Parts			298.6	323.8	8.4	71.0
Switchgear			468.5	538.1	14.9	25.9
Switches			202.1	210.9	4.4	24.5
Relays			83.0	74.4	-10.4	39.1
Rectifiers and Rectifying Equipment			114.7	154.9	35.0	25.5
Resistors			82.9	83.7	1.0	25.4
Insulated Electrical Conductors With Fittings			61.2	73.1	19.4	16.2
Electric Motors and Generators			179.6	228.0	26.9	25.6
Electric Motors Under 1/40 Horsepower	12,859,644 no	13,319,305 no	83.6	87.8	5.0	55.1
Generator Sets			52.2	79.7	52.7	41.0
Welding Equipment and Parts			96.0	87.0	-9.4	39.6
Batteries and Parts (excl. lead-acid batteries)			130.0	210.4	61.8	57.8
Primary Cells and Primary Batteries and Parts			65.5	99.4	51.8	55.7
Nickel-Cadmium Storage Batteries	17,658,970 no	29,236,352 no	52.2	82.0	57.1	58.1
Permanent Magnets and Magnetic Workholders			79.3	93.4	17.8	48.3
Electric Signalling Apparatus and Parts			163.2	210.7	29.1	30.8
Indicator Panels and Parts			86.4	112.1	29.7	57.8
Transport Equipment			524.2	570.5	8.8	7.4
Civilian Aircraft Parts and Engines			375.7	473.5	26.0	9.6
Consumer Goods			14,017.2	15,451.1	11.0	19.7
Color Video Cassette Recorders	15,754,990 no	16,888,994 no	4,084.8	4,307.3	5.4	96.2
Black-and-White Video Cassette Recorders	141,778 no	699,317 no	48.8	151.6	210.7	98.2
Video Tape Players	195,485 no	225,194 no	81.1	95.5	17.8	84.4
Assembled Color Television Receivers	1,808,721 no	1,530,546 no	477.9	502.1	5.1	34.6
Television Combinations			136.8	345.6	152.6	65.4
Unassembled Television Receivers and Incomplete Subassemblies			285.0	306.5	7.5	31.4
Television Picture Tubes and Parts			113.4	122.2	7.8	45.7
Parts for Television Receivers			649.6	676.7	4.2	47.5
Converters, Amplifiers and Couplings for Cable Television			307.8	313.4	1.8	57.7
AM and AM/FM Radio Receivers (except for motor vehicles)	5,502,110 no	4,455,365 no	264.8	234.2	-11.6	43.7
Radio-Tape Recorder Combinations	5,731,264 no	2,596,305 no	278.8	135.3	-51.5	40.9

(continued)

Table 52: U.S. Imports from Japan by End-Use Classification, 1985 and 1986 (continued)

(in millions of dollars, Customs value basis, and indicated quantity units)

Commodity	Quantity		Value		Percent Change	Japan's Share of U.S. Imports
	1985	1986	1985	1986	1985/86	1986
Radio-Tape Player Combinations	11,220,463 no	11,611,974 no	$675.7	$712.9	5.5%	48.5%
Radio-Phonograph-Tape Recorder Combinations	646,504 no	1,049,907 no	225.8	635.6	181.5	95.7
Audio Tape Players	5,084,910 no	5,153,790 no	121.4	151.9	25.1	73.2
Audio Tape Recorders and Parts	4,530,232 no	3,592,487 no	525.3	555.6	5.8	62.2
Tape Recorder and Tape Player Combinations			142.7	210.2	47.3	43.6
Turntables and Parts	4,624,959 no	5,575,509 no	373.8	533.2	42.6	89.9
Electric Appliances and Parts			808.5	763.3	-5.6	29.6
Refrigerators and Parts			70.7	73.6	4.1	21.1
Microwave Ovens	3,601,307 no	3,547,653 no	407.4	367.1	-9.9	49.9
Electric Stoves and Ranges and Parts			172.2	178.1	3.4	84.8
Portable Typewriters	1,421,237 no	922,741 no	120.6	88.5	-26.6	62.7
Earthen and China Tableware and Household Articles			392.0	391.5	-0.1	35.5
Nonbone China Tableware	195,497,796 pc	150,243,924 pc	149.4	144.5	-3.3	37.6
Earthen Tableware	332,884,500 pc	304,721,580 pc	177.2	174.7	-1.4	53.7
Table Flatware and Kitchen Knives			106.6	93.1	-12.7	33.7
Variable Focus Still Cameras	5,218,913 no	6,093,120 no	489.6	643.2	31.4	88.8
Mounted Photographic Lenses	5,613,419 no	5,026,321 no	158.2	194.5	22.9	80.8
Optical Elements			107.0	129.8	21.3	37.9
Glasses and Frames			63.6	86.0	35.2	13.9
Clocks and Watches and Parts			476.2	472.9	-0.7	31.0
Toys and Sporting Goods			563.8	523.1	-7.2	11.8
Toys			257.1	134.8	-47.6	6.9
Video Games and Parts			77.5	129.7	67.4	49.7
Fishing Equipment			81.0	79.2	-2.2	35.3
Musical Instruments and Parts			293.7	391.0	33.1	59.0
Electronic Musical Instruments			175.7	245.1	39.5	89.2
Motorcycles and Parts (excl. engines)			883.8	853.3	-3.5	92.8
Motorcycles	710,674 no	534,742 no	693.7	691.6	-0.3	94.0
Piston Displacement Between 190 cc and 290 cc	118,642 no	104,780 no	115.6	140.2	21.3	97.7
Piston Displacement Over 290 cc	239,129 no	191,332 no	418.3	410.3	-1.9	92.8
Parts (excl. engines)			190.1	161.7	-14.9	87.9
Adult Bicycles and Parts			124.1	155.2	25.1	34.1
Parts			65.3	86.8	32.9	54.4
Outboard Motors and Parts	157,450 no	124,010 no	129.1	183.5	42.1	70.5
Clothing and Accessories			487.3	464.0	-4.8	2.7
Women's Cotton Slacks	11,099,292 no	8,859,888 no	78.8	59.6	-24.4	9.6
Furniture			68.6	75.5	10.1	2.3
Pearls (not set or strung)			200.4	161.5	-19.4	83.2
Jewelry			67.2	74.4	10.7	3.0
Printed Material			153.1	197.0	28.7	14.3
Pens and Pencils			109.4	129.3	18.2	57.5
Pharmaceuticals			165.5	261.0	57.7	11.9
Benzenoid Drugs			75.8	131.7	73.7	13.6
Intermediate Goods			7,035.3	6,948.7	-1.2	6.8
Steel Mill Products	5,990,077 stn	4,422,244 stn	3,048.3	2,231.5	-26.8	27.3
Wire Rods and Bars	1,190,072 stn	841,812 stn	453.1	345.7	-23.7	21.6
Unalloyed Wire Rods	236,553 stn	216,685 stn	84.7	83.6	-1.3	22.7
Semifinished Angles, Shapes and Sections Over 3"	669,259 stn	408,494 stn	202.3	129.7	-35.9	24.3

(continued)

Table 52: U.S. Imports from Japan by End-Use Classification, 1985 and 1986 (continued)

(in millions of dollars, Customs value basis, and indicated quantity units)

Commodity	Quantity 1985	Quantity 1986	Value 1985	Value 1986	Percent Change 1985/86	Japan's Share of U.S. Imports 1986
Plates and Sheets	2,945,492 stn	2,535,358 stn	$1,430.3	$1,209.6	-15.4%	31.5%
Tin Plate and Tin-Coated Sheets	253,122 stn	202,906 stn	137.2	113.0	-17.6	54.8
Coated Plates and Sheets	1,492,082 stn	1,237,330 stn	748.0	628.5	-16.0	49.8
Unalloyed Non-Pickled Plates and Pickled Sheets	214,634 stn	211,684 stn	72.0	67.0	-6.9	10.5
Unalloyed Cold-Rolled Sheets	624,185 stn	527,367 stn	257.7	208.4	-19.1	23.5
Strip	72,072 stn	50,981 stn	82.0	62.7	-23.5	30.1
Rails	210,896 stn	88,661 stn	83.5	34.3	-58.9	43.1
Wire (excl. flat wire and insulated electric wire)	140,617 stn	107,502 stn	100.8	80.3	-20.3	21.0
Tubes, Pipes and Fittings	1,425,788 stn	717,304 stn	889.6	464.4	-47.8	29.2
Unalloyed Welded or Seamless API Line Pipe	271,457 stn	178,563 stn	114.5	73.9	-35.5	27.3
Unalloyed Welded or Seamless Pipes and Tubes, Threaded	261,114 stn	83,430 stn	179.9	53.7	-70.2	65.3
Unalloyed Pipes and Tubes of Circular Cross Section	186,789 stn	102,700 stn	103.8	55.7	-46.7	42.7
Stainless and Alloy Tool Steel Pipes and Tubes	90,855 stn	46,948 stn	118.3	74.3	-37.2	38.6
Nonferrous Metals			535.0	504.6	-5.7	6.6
Copper and Copper Alloys			106.9	121.0	13.2	8.8
Pipes and Tubes			62.2	71.4	14.8	42.0
Aluminum and Aluminum Alloys			347.5	330.3	-4.9	12.0
Wrought Aluminum Sheets and Strip, Not Clad	152,993 stn	152,351 stn	313.8	294.1	-6.3	45.7
Metal Containers			141.0	14.0	-90.1	8.4
Wire Products (excl. insulated electric wire)			140.1	131.3	-6.3	24.9
Nails and Industrial Fasteners			419.4	384.4	-8.3	34.4
Steel Nuts	56,105 stn	45,757 stn	88.8	80.5	-9.3	46.7
Steel Screws	177,510 stn	136,363 stn	200.5	172.4	-14.0	52.6
Industrial Chemicals (excl. fertilizers and pharmaceuticals)			1,098.1	1,359.7	23.8	18.9
Other Cyclic Organic Chemical Products			123.1	139.0	12.9	16.2
Organic Acids, Acid Anhydrides and Salts			42.9	127.3	196.7	38.6
Amino Acids and Other Nitrogenous Compounds			113.5	142.5	25.6	20.0
Synthetic Organic Dyestuffs			117.2	155.2	32.4	33.4
Plastic Materials and Resins			321.4	344.0	7.0	21.7
Flexible Film, Strips and Sheets of Plastic Materials			135.1	156.7	16.0	27.2
Tires and Tubes (excl. car, truck and bus tires)			94.8	100.8	6.3	28.9
Paper Products			106.4	137.3	29.0	2.3
Coated Paper and Paperboard			66.7	91.6	37.3	12.9
Yarns, Fabrics and Made-Up Textile Articles			715.2	855.4	19.6	14.8
Cotton Fabrics	111,755,237 syd	117,690,865 syd	142.6	163.5	14.7	16.3
Manmade-Fiber Fabrics	217,790,778 syd	304,217,489 syd	272.2	357.1	31.2	37.7
Fabrics 85 Percent or More By Weight Polyester	134,181,919 syd	186,794,941 syd	135.9	211.0	55.3	54.1
Photographic Film and Paper (excl. film for retail sale)			345.7	358.3	3.6	43.1
Medical X-Ray Film	90,220,783 sft	76,429,306 sft	71.7	55.2	-23.0	45.1
Silver Halide Color Photographic Paper	686,697,071 sft	682,674,112 sft	133.9	131.0	-2.2	48.4
Food and Feed			500.3	503.9	0.7	2.1
Fish and Fish Products			278.1	260.1	-6.5	5.5
Miscellaneous Imports			734.4	824.4	12.3	7.8
U.S. Goods Returned			346.8	369.7	6.6	6.2
Estimated Shipments			315.3	389.2	23.4	19.1

Key to quantity abbreviations: no = number pc = pieces sft = square feet stn = short tons syd = square yards

Source: Department of Commerce

Table 53: U.S. Direct Investment Position Abroad, Year-End 1982-1986

(in millions of dollars)

	1982	1983	1984	1985	1986
Developed Countries	$154,381	$155,736	$157,461	$171,869	$194,710
Canada	43,511	44,339	46,830	47,106	50,178
United Kingdom	27,537	27,637	28,635	32,801	34,990
West Germany	15,463	15,319	14,794	16,743	20,344
Switzerland	12,863	14,099	14,865	15,765	17,458
Netherlands	6,760	6,613	6,201	7,286	11,874
Japan	6,407	7,661	7,920	9,246	11,333
France	7,391	6,614	6,224	7,870	9,471
Australia	9,089	9,005	8,674	8,427	8,384
Italy	4,316	4,461	4,592	5,711	6,987
Belgium	5,549	4,438	4,602	5,333	6,302
Developing Countries	48,058	45,746	50,131	52,539	60,609
Bermuda	11,519	11,056	13,009	12,876	14,595
Brazil	9,290	9,068	9,377	8,889	9,135
Mexico	5,019	4,381	4,568	5,070	4,826
Panama	4,413	4,837	4,467	4,004	4,352
Indonesia	2,295	2,770	3,987	4,434	4,305
International	5,314	5,721	5,402	5,340	4,571
Total	207,752	207,203	212,994	229,748	259,890
of which:					
Petroleum	57,817	57,574	59,089	58,030	61,151
Manufacturing	83,452	82,907	85,253	95,104	107,241
Wholesale Trade	20,788	21,278	21,790	22,710	25,246
Banking	10,317	12,387	13,246	14,651	15,532
Finance, Insurance and Real Estate	18,018	15,075	15,828	21,447	32,813
Services	4,615	4,670	4,625	4,744	5,112
Other	12,745	13,312	13,165	13,061	12,795

Source: Department of Commerce

Table 54: U.S. Direct Investment Position in Japan, Year-End 1982-1986

(in millions of dollars)

	1982	1983	1984	1985	1986
Total	$6,407	$7,661	$7,920	$9,246	$11,333
Petroleum	1,650	1,902	2,052	2,184	2,623
Manufacturing	3,058	3,915	3,942	4,593	5,305
Food Products	166	155	65	128	157
Chemicals	778	1,148	1,175	1,317	1,636
Metals	67	79	42	82	115
Nonelectric Machinery	1,103	1,270	1,245	1,665	1,680
Electric Machinery	243	312	374	331	417
Transport Equipment	380	480	477	625	706
Other	322	471	564	445	594
Wholesale Trade	1,093	1,252	1,314	1,584	2,267
Banking	166	176	176	178	187
Finance, Insurance and Real Estate	312	325	347	520	689
Services	42	21	31	82	101
Other	85	69	58	104	160

Source: Department of Commerce

Table 55: Foreign Direct Investment Position in the United States, Year-End 1982-1986

(in millions of dollars)

	1982	1983	1984	1985	1986
United Kingdom	$28,447	$32,152	$38,387	$43,555	$51,397
Netherlands	26,191	29,182	33,728	37,056	42,852
Japan	9,677	11,336	16,044	19,313	23,433
Canada	11,708	11,434	15,286	17,131	18,312
West Germany	9,850	10,845	12,330	14,816	17,356
Switzerland	6,378	7,464	8,146	10,568	12,134
Netherlands Antilles	9,190	9,948	10,935	10,443	8,289
France	5,708	5,726	6,591	6,670	7,415
OPEC Countries	4,045	4,039	4,892	4,607	5,103
Total	124,677	137,061	164,583	184,615	209,329
of which:					
Mining	1,876	1,928	3,920	4,039	4,665
Petroleum	17,660	18,209	25,400	24,231	24,962
Manufacturing	44,065	47,665	51,802	59,584	68,057
Wholesale Trade	18,397	21,031	24,455	29,051	31,927
Retail Trade	5,207	5,482	6,764	6,822	9,754
Banking	7,846	8,697	10,326	11,377	12,388
Finance	2,159	2,269	5,633	4,246	4,903
Insurance	7,928	8,665	8,922	11,806	13,623
Real Estate	11,520	14,636	17,761	19,402	21,231
Other	8,019	8,478	9,599	14,058	17,820

Source: Department of Commerce

Table 56: Japan's Foreign Direct Investment Position in the United States, Year-End 1982-1986

(in millions of dollars)

	1982	1983	1984	1985	1986
Total	$9,677	$11,336	$16,044	$19,313	$23,433
Mining	4	*	7	7	*
Petroleum	113	-408	-88	24	*
Manufacturing	1,624	1,605	2,460	2,738	3,017
Food Products	182	186	186	159	155
Chemicals	252	283	252	268	289
Metals	117	140	541	562	552
Machinery	423	466	628	715	873
Other	649	530	853	1,033	1,147
Wholesale Trade	6,126	7,823	9,689	11,796	12,963
Retail Trade	151	234	252	251	292
Banking	1,325	1,384	1,853	2,160	2,745
Finance	-570	*	513	51	480
Insurance	169	182	138	119	*
Real Estate	396	515	744	1,536	2,480
Other	339	430	475	630	*

*Suppressed to avoid disclosure of data on individual companies.

Source: Department of Commerce

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REPORT

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IN THIS ISSUE:

The Bilateral Trade Account: Still Waiting For The Big Turnaround 1

Japanese Reaction To The Trade Bill 4

Kansai Airport Talks In Holding Pattern 5

Defense White Paper Calls For Expanded Effort 6

Notes: Soviet Expulsions; 7J7 Aircraft Project; Japanese Launch Vehicle 7

The Bilateral Trade Account: Still Waiting For The Big Turnaround

Disappointing. That was the reaction of policymakers in Tokyo and Washington alike to the news that the U.S. trade deficit with Japan had edged up in 1987's first half after dipping on a year-to-year basis in the opening quarter. Economists on both sides of the Pacific were also discouraged by the rise in the red-ink entry to $28.1 billion (imports on a Customs value basis) from $26.9 billion in the January-June 1986 period (or to $29.7 billion from $28.7 billion with imports valued c.i.f.) since they too had expected 1987 to be the watershed year for the bilateral trade account. But while the new trade numbers undercut government and private-sector predictions that the yen-dollar realignment would finally produce a significant turnabout in the huge imbalance this year, it is clear that the recent pattern of ever-bigger annual U.S. trade deficits with Japan has been broken.

At first glance this statement might seem to be an exercise in public relations. After all, sales to Japan did drop 3.8 percent in the first six months of 1987 to $12.6 billion despite the competitive benefits of the weaker

U.S. Exports to Japan

(in millions of dollars, f.a.s. value basis)

	January-June 1986	January-June 1987	Percent Change
Total Exports	$13,072.2	$12,573.7	-3.8%
Industrial Supplies	4,122.0	4,630.3	12.3
Bituminous Coal	325.4	248.9	-23.5
Petroleum Products	280.6	327.9	16.9
Natural Gas	98.7	64.2	-35.0
Logs and Lumber	493.3	648.6	31.5
Paper Base Stocks	254.9	325.9	27.9
Paper and Paper Products	166.8	196.3	17.7
Organic Chemicals	371.4	432.2	16.4
Inorganic Chemicals	394.5	385.9	-2.2
Plastics and Synthetic Resin Compounds	155.9	177.2	13.7
Manufactured Fertilizers and Insecticides	138.7	143.1	3.2
Steel Scrap	124.4	33.9	-72.7
Nonferrous Ores and Scrap	241.9	244.4	1.0
Nonferrous Metals	104.8	148.2	41.4
Textiles	57.8	71.2	23.2
Raw Cotton	96.3	195.7	103.2
Hides and Skins	164.0	170.8	4.1
Leaf Tobacco	74.0	159.7	115.8
Capital Goods	3,022.0	3,230.4	6.9
Nonelectric Machinery	1,689.5	1,867.8	10.6
Data Processing Equipment	656.7	757.3	15.3
Measuring, Testing and Control Instruments	220.7	255.8	15.9
Laboratory Testing and Control Instruments	49.4	56.6	14.6
Scientific, Professional and Medical Equipment	156.6	202.8	29.5
Power Generating Equipment (excl. aircraft and automotive engines)	37.7	44.3	17.5
Metalworking Equipment	76.1	64.5	-15.2
Service Industry Equipment	65.8	83.2	26.4
Electric Machinery	436.9	522.0	19.5
Generators and Transformers	38.0	31.9	-16.1
Broadcast and Communications Equipment	180.6	263.6	46.0
Telephonic and Other Electric Equipment	218.3	226.4	3.7
Transportation Equipment	895.6	840.6	-6.1
Civilian Aircraft	410.1	287.8	-29.8
Civilian Aircraft Engines and Parts	309.1	352.3	14.0
Automotive Parts	109.6	122.7	12.0
Food and Feed	2,344.3	2,475.0	5.6
Corn	475.2	454.2	-4.4
Sorghum	78.1	74.5	-4.6
Soybeans	447.6	377.9	-15.6
Wheat	231.3	180.9	-21.8

Fruits and Vegetables	287.5	364.1	26.6
Meat and Meat Products	351.1	407.9	16.2
Fish and Fish Products	232.7	346.6	48.9
Consumer Goods	790.3	1,206.8	52.7
Pharmaceuticals	327.2	344.8	5.4
Toys and Sporting Goods	44.2	78.9	78.5
Cigarettes	53.0	229.0	332.1

U.S. Imports from Japan

(in millions of dollars, Customs value basis)

	January-June 1986	January-June 1987	Percent Change
Total Imports	$39,960.1	$40,628.0	1.7%
Automotive Products	15,728.3	16,497.9	4.9
Cars	9,837.0	9,928.2	0.9
Trucks	2,868.2	2,907.6	1.4
Automotive Parts	3,015.4	3,660.7	21.4
Capital Goods	12,332.0	13,692.8	11.0
Nonelectric Machinery	8,365.9	9,236.8	10.4
Business Machines	3,734.3	4,384.7	17.4
Metalworking Machinery	665.1	725.1	9.0
Agricultural Machinery	266.7	279.3	4.7
Specialized Industrial Machinery	763.8	881.6	15.4
Scientific, Professional and Medical Equipment	409.4	423.8	3.5
Electric Machinery	3,688.5	4,041.3	9.6
Transportation Equipment	277.6	414.7	49.4
Consumer Goods	7,644.2	6,207.2	-18.8
Video and Audio Recorders and Players and Stereo Equipment	2,930.2	1,878.6	-35.9
Television Sets	447.4	305.1	-31.8
Radio Receivers	119.5	127.8	6.9
Tableware and Glassware	218.8	196.7	-10.1
Metal Cookware and Cutlery	224.7	208.7	-7.1
Photographic and Optical Goods	545.2	539.4	-1.1
Clocks and Watches	226.4	236.3	4.4
Toys and Sporting Goods	246.4	275.9	12.0
Motorcycles and Parts	519.3	287.7	-44.6
Clothing	234.9	202.1	-14.0
Intermediate Goods	3,610.8	3,638.7	0.8
Steel Mill Products	1,270.3	1,079.9	-15.0
Nonferrous Metals	264.9	220.0	-16.9
Organic Chemicals	361.3	410.8	13.7
Textiles	438.3	407.3	-7.1

dollar. But this decline is a misleading indicator of American export strength since first half 1986 results were inflated by the transshipment of $2 billion worth of foreign bullion through the United States to Japan in June. Leaving out reexports, sales of U.S.-origin goods were up 13.4 percent at mid-year -- a strong showing under any circumstances but especially so given the combination of sluggish domestic Japanese demand in the April-June quarter, generally weak agricultural and industrial input prices and a temporary slowdown in aircraft deliveries. With government and business economists in Japan forecasting a healthy recovery in 1987's second half (see JEI Report No. 31B, August 14, 1987), firmer domestic demand will give a one-two boost to U.S. exports for the rest of the year.

The import numbers through June add weight to the prediction that the 1987 bilateral trade deficit will fall short of last year's $55 billion (or $58.8 billion imports c.i.f) figure by at least several billion dollars. Totaling $40.6 billion at the halfway point, purchases from Japan were up only 1.7 percent. Soft market conditions in a number of key U.S. markets certainly contributed to this slim gain, but the fact remains that the yen's 60 percent-plus appreciation since February 1985 has started to put a big dent in the volume of imports. A look at motor vehicle imports highlights what is happening to most other major products brought in from Japan: higher prices are triggering an offsetting drop in deliveries, with cars down 11 percent in the January-June 1987 period and trucks behind 7.2 percent. Since automotive parts, computer equipment and some other types of capital goods seem to be the only big-ticket products able to buck the yen's rise, it is a safe bet that 1987 purchases from Japan will be no higher than last year's.

Susan MacKnight

Japanese Reaction To The Trade Bill

The omnibus trade package pending before a House-Senate conference committee is, most observers agree, targeted more at Japan than any other single country. It is hardly surprising, then, that the Japanese government and business community have added their voices to the chorus protesting rising protectionism in the United States. These protests include complaints about revisions in U.S. trade law, sector-specific clauses and provisions that single out certain countries. Most worrisome to Japan and other U.S. trading partners, however, is the continued congressional focus on the trade practices of other countries rather than its own responsibility for the trade and budget deficits.

Most of the arguments focus on one point: the bill is incompatible with the General Agreement on Tariffs and Trade. Since the legislation is "strongly tinged with protectionism," according to the Japan Federation of Economic Organizations (Keidanren), its passage would endanger the new round of multilateral trade negotiations under the GATT. This point is made even more significant by the fact that the United States has been the major proponent of the new round. Keidanren goes on to warn that passage of the trade bill may injure this country's credibility during the negotiations -- an argument to which the White House is all too sensitive.

Japanese business leaders also claim that the bill's focus on reciprocity is inconsistent with the "widely accepted cardinal principles underpinning

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ISSUES PENDING BEFORE THE TRADE CONFERENCE COMMITTEE

Summary

A House-Senate conference committee has begun to grapple with two omnibus trade bills that were passed earlier this year. Both bills provide for numerous changes in American trade law. The conference committee, consisting of some 199 representatives and senators, is scheduled to meet this month to reconcile differences between the House and Senate versions of the bill. The differences are significant, as are the White House's objections to certain provisions. Its fate may depend on how much influence partisan disputes and election concerns have on the negotiations, whether congressional leaders opt for a bill or an issue, whether the administration exhibits some flexibility, and the speed with which other issues pending before Congress are concluded.

Introduction

Congressional hopes of an early adjournment this year have all but disappeared, since issues such as the budget and the public debt limit extension -- both of which must be finished by the end of the year -- have yet to be resolved. Partisan disputes and filibusters have regularly delayed the legislative process, especially on the Senate side of the Hill. Trade legislation, however, managed to escape these problems. Pinpointed as a top priority at the beginning of the session, hearings commenced almost immediately after Congress convened. And although there was a certain element of partisanship during much of the debate, the two major trade committees -- House Ways and Means and

Senate Finance -- managed to craft their portions of the bill through bipartisan compromise. In this way the respective chairmen, Dan Rostenkowski (D, Ill.) and Lloyd Bentsen (D, Tex.), were able to highlight their consensus approach to trade policy and minimize the chances that trade would become a partisan tussle.

Not all the committees have taken the same approach; in some (House Energy and Commerce, for example), party-line votes were not uncommon. But in the end the House passed HR 3 in April and the Senate passed S 1420 in July[1] (see Appendices 1 and 2). Each passed with strong support from both sides of the aisle (although as shown below there was an element of partisanship in the votes).

The real battle has been between administration officials, who argue against drastic changes in trade law, and Congress, which favors drastic legislative steps to combat this country's huge trade deficit. The White House opposes both versions of the legislation. Administration officials have said, however, that the president does want a bill, but that substantial changes must be made before it reaches his desk.

In addition to White House concerns, several U.S. trading partners have expressed strong doubts about both the House and the Senate proposals. Interestingly enough, however, many of the objectionable provisions of the House bill are not included in the Senate proposal -- and vice-versa. Consequently, it is still possible for the conferees to tone the bill down considerably (by striking the most controversial elements of the bills) or to produce a bill that is so extreme that its veto is all but assured (by incorporating the most objectionable provisions of both bills).

Issues Facing the Conferees

Although the breakdown of "good" and "bad" provisions varies according to whom one asks, it is possible to isolate three major types of provisions in the bills. Some proposals, such as those that would liberalize export control law, renew presidential privileges regarding trade negotiations, and boost U.S. export promotion programs, are clearly designed to enhance the U.S. trade position in international markets. Others, such as provisions mandating retaliation in cases involving foreign unfair trade practices and proposals setting a "reciprocal access" standard in bilateral trade, will increase the likelihood that this country will take action to restrict foreign imports. A third type of provision involves new proposals, including some that are extremely controversial (e.g. one that would expand foreign investment reporting requirements in this country) and others that implicitly acknowledge some U.S. responsibility for the trade deficit, including "competitiveness" proposals concerning education, worker retraining and the government's role in aiding private enterprises.

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[1] Both bills are now known as HR 3, but the Senate bill will be referred to as S 1420 in this report for the sake of clarity.

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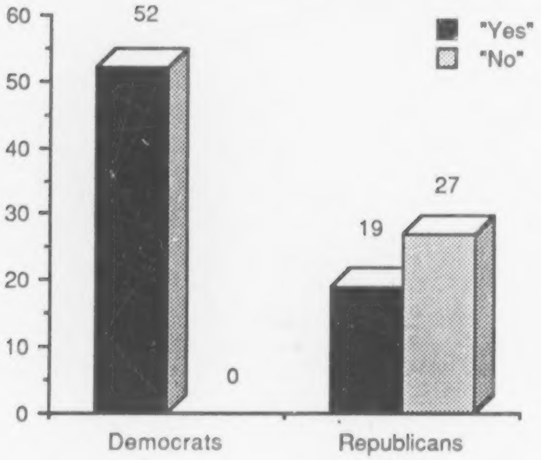
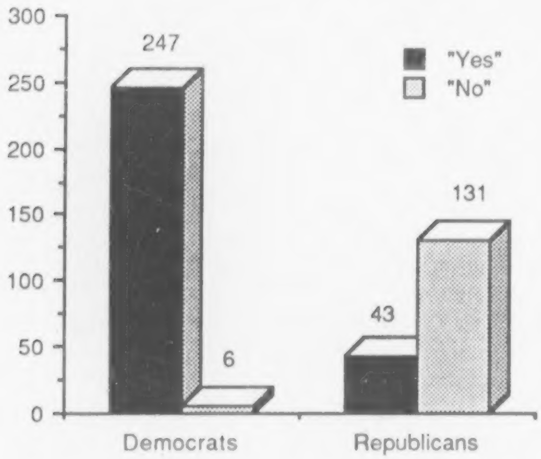


Votes on S 1420 by Party



Votes on HR 3 by Party

It would be difficult to itemize each provision in HR 3 and S 1420, each of which run over 1000 pages. Still, some of the key issues that must be resolved are listed below:

A Comprehensive Response to Unfair Trade Practices: Gephardt vs. Super 301 - The question of whether a comprehensive response is necessary to combat foreign unfair trade practices has been one of the most publicized and emotional elements of the trade debate. Ultimately, both chambers opted for such an approach, but the House approved a much more severe measure by presidential-hopeful Richard Gephardt (D, Mo.) that would require the International Trade Commission to identify countries with an "unwarranted" trade surplus (according to a mathematical formula) that engage in a pattern of unfair trade practices.

The administration would have six months to negotiate a pact to eliminate these practices and if no agreement is reached would be required to implement measures during the first year that would reduce the surplus by the amount that is "unwarranted." In subsequent years an annual 10 percent reduction would be required until the specific practices are eliminated or the surplus is no longer judged to be unwarranted. (The president would have the authority -- subject to a congressional override -- to decide against such actions if the country in question has serious balance of payments difficulties or if the actions would not be in this country's economic interest.)

The Senate proposal is milder. According to S 1420, the White House would be required to initiate investigations under Section 301 of the 1974 Trade Act of countries that are found to "maintain a consistent pattern of import barriers and market distorting practices." Retaliation would only be required in cases that meet mandatory retaliation criteria as defined by the proposed amendments to Section 301 law (see below). Moreover, the Senate Finance Committee and the House Ways and Means Committee would have the authority to petition the U.S. Trade Representative to undertake a Section 301 investigation.

The White House strongly prefers the Senate proposal, having already warned that a bill containing the Gephardt provision is likely to be vetoed. Even so, the administration would prefer not to see any comprehensive proposal enacted so that it is free to respond to trade problems with as much flexibility as possible. The Japanese and other U.S. trading partners have attacked the proposals as protectionist and charged that they violate U.S. obligations under the General Agreement on Tariffs and Trade. Japanese officials protest that the Gephardt amendment incorrectly assumes that the blame for the U.S. trade deficit lies with its trading partners. A statement by the Ministry of Foreign Affairs also blasted the Senate proposal, especially its specific reference to Japan as an example of a country that engages in a pattern of unfair practices, as well as its "absolutely one-sided pre-judgments about Japan."

Some sort of comprehensive approach will probably be adopted by the conferees. Given the "protectionist" label that the Gephardt amendment has earned in this country and abroad -- as well as the fact that it may be the single most controversial proposal offered during the trade debate -- it appears likely that the final product will not be as extreme as the current House proposal.

Section 301 of the 1974 Trade Act - One of the central problems in the trade debate has been identifying the most effective ways to use Section 301 law (which provides for presidential negotiations and possible retaliation with countries concerning unfair trading practices) to persuade this country's trading partners to abandon particular practices. Still to be resolved are questions over the definition of unfair practices. Both bills expand the current definition to include violations of internationally accepted labor rights, toleration of cartels and export targeting. The Senate bill also adds state trading to the list of unfair practices.

Another issue is how best to use the threat of retaliation in bilateral negotiations. Some members have argued that the most effective bargaining tool would be the assurance that if no agreement is reached, U.S. retaliation is a certainty. In response, the administration launched a scathing attack against mandatory retaliation. In the House bill (barring an agreement with the foreign country or a GATT finding unfavorable to the United States), retaliation is mandatory in the case of trade agreement violations unless the U.S. Trade Representative determines that retaliation would harm U.S. economic interests more than if no action were taken. This, in effect, gives the administration a "national economic interest" loophole by which to decide against retaliation.

Similarly, the Senate bill requires retaliation in cases of trade agreement violations, but limits the exceptions. Under S 1420 the White House could refuse to take action if a GATT panel decides against the United States, if a bilateral agreement is reached (that meets the approval of the majority of the industry or of the petitioner), if the foreign country provides adequate compensation, or if the president decides that retaliation could jeopardize national security. No allowance is made for exceptions in the interest of the national economy.

The administration opposes any form of mandatory retaliation and will attempt to persuade conferees to approve a bill that gives negotiators more latitude. This issue is important enough to the White House that its inclusion may be a strong incentive for a presidential veto. Japanese officials are also watching this provision with concern and have stated that mandatory retaliation constitutes "negotiation under duress" for U.S. trading partners. Japanese spokesmen also argue that the assurance of retaliation may prompt U.S. industries to file Section 301 complaints in the hope of receiving temporary import protection, even in the absence of foreign unfair practices.

Moreover, each of the bills transfers some presidential authority to the USTR. This was done primarily to make responses to trade complaints more routine; many members believe that the USTR would focus on trade goals rather than on other concerns. But because the president relies on the advice of several agencies when making trade decisions, the White House objects to the transfer of authority. The administration has said that the president must consider the positions of all his economic advisors; transferring authority to the USTR would be "inconsistent with USTR's role as coordinator of advice to the president."

In the final analysis, however, the trade representative serves at the pleasure of the president and is unlikely to make major trade decisions on his own. Thus, although the White House will fight these provisions, a compromise would not be a devastating blow to the president.

Negotiating Authority - This is the single most important issue to the administration since the president needs renewal of his authority to submit trade agreements for "fast track" congressional approval (limited debate and no amendments) if he is to succeed in the new round of multilateral trade negotiations or in gaining approval for a U.S.-Canada free-trade agreement. This is something of a Catch-22, however, since the administration needs the trade bill to renew its negotiating authority, but a trade bill that is viewed abroad as protectionist undermines this country's position in the negotiations.

Few in Congress would deny the president this authority. The primary differences between the House and Senate bills lie in those mechanisms by which the president negotiates reductions in tariff barriers, and in the question of congressional oversight. The House bill grants the administration close to what it requested (although the renewal is for a shorter time period than the White House had hoped). As has been the case in the past, HR 3 gives the president the authority to proclaim reductions in tariffs (subject to certain limitations) as well as fast-track negotiating authority for agreements to reduce nontariff barriers. As for congressional oversight, the House proposal requires more consultations with Congress to increase legislators' participation in and influence over the negotiations. On the whole, it appears that the White House would be satisfied with such an arrangement.

The Senate bill is another story. First, it eliminates the president's tariff proclamation authority and substitutes instead a fast-track procedure for both tariff and nontariff agreements. Moreover, S 1420 allows legislators to withdraw that authority if the House and the Senate pass a resolution of disapproval within sixty days of each other. Not surprisingly, the administration objects strongly to the Senate proposal, insisting that the absence of tariff proclamation authority "significantly reduces [its] leverage in trade negotiations and unnecessarily complicates implementation of trade agreements." Moreover, it has denounced the provisions allowing revocation of fast-track authority as a "veto-proof procedure [that] could impair [its] leverage in trade negotiations."

Section 201 of the 1974 Trade Act - The laws governing relief for industries that are injured by a surge in imports have also been an extremely emotional subject. The House proposal transfers some presidential authority to the USTR in the hopes that it will be guided by trade considerations exclusively. The Senate bill requires the president to implement the ITC's recommendations for relief unless such relief would harm national security, hurt industries that depend on the product in question, impose a burden on the poor, impose a burden on U.S. agriculture, or cost more jobs than are saved or created. Although these exceptions constitute a de facto national economic interest loophole for the president, the administration opposes any restrictions on its discretion to decide whether relief is appropriate. According to one statement, "the president must have discretion to consider the overall national economic interest in determining what relief, if any, is appropriate." Among other things, the White House also has reservations about provisions that increase the maximum relief period, Senate proposals concerning fast-track relief for perishable goods and provisional relief for critical circumstances.

More worrisome to U.S. trading partners are provisions that appear to lower the threshold for granting relief to industries. For example, both bills require the ITC to consider the success of the industry over the course of a business cycle (which is designed to make it easier to obtain relief during a recession); the House bill also precludes using a recession as the single most important cause of injury. (The automotive industry is watching these provisions very closely, since in 1980 the ITC determined that recessionary conditions rather than imports were the primary source of injury to the industry; consequently it was denied relief under Section 201.) The Japanese Ministry of Foreign Affairs has protested eliminating recession as a cause of injury as an "arbitrary manipulation of causality [that] runs the risk of being GATT inconsistent."

Dumping and Countervailing-Duty Law - These proposals have also raised concerns in the White House and abroad as many observers have predicted that the changes, which are numerous and extremely technical, may have significant unforeseen consequences. If this is the case, they say, antidumping and countervailing-duty provisions may do more to stifle trade than any other element of the trade bill, including sweeping proposals such as the Gephardt amendment.

A major complaint about HR 3 concerns diversionary dumping, which requires the White House to include dumped inputs in calculating dumping margins on downstream products. The administration argues that this law would be impossible to administer, and especially so if this country wants to conform to the GATT. Japanese officials also object to it, claiming that it "is unrealistic and unfair to hold the manufacturer accountable to any other price than was actually available to him for inputs traded in the ordinary course of trade."

Provisions in both bills to monitor the activities of companies that are multiple dumping offenders are also objectionable to the White House on the grounds that this would divert scarce resources from more obvious dumping offenses and could spark foreign mirror legislation. Other provisions included in the bills involve anti-circumvention measures, redefinition of "domestic subsidy," downstream product monitoring, application of countervailing-duty laws to non-market economies, ITC determinations under critical circumstances, and standards governing the ITC determination of material injury and threat of material injury. On the whole the administration finds the House provisions more objectionable, but has also labeled many of the Senate changes "unduly expensive and burdensome.

Telecommunications - Although most legislators have tried to avoid incorporating sectoral provisions in the bill, some exceptions have been made. Legislation concerning telecommunications trade in particular has received broad congressional support. Both HR 3 and S 1420 contain a provision mandating retaliation against countries that do not provide reciprocal access to U.S. telecommunications products and services. The administration opposes both provisions (as it has all proposals based on the principle of sectoral reciprocity). Recently, in fact, the White House began citing telecommunications provisions in its "veto bait" list. Since the retaliation requirements under the House provision are less strict, however, the administration prefers it to S 1420's proposal. Not surprisingly, Japanese business and government officials have denounced the provisions, charging that evaluating the existence of reciprocal access is vague, arbitrary and inconsistent with the GATT.

Import Surcharge to Fund the Trade Adjustment Assistance Program - Both bills include provisions to finance programs to retrain displaced workers by imposing an import fee. HR 3 instructs the USTR to seek a GATT agreement for the imposition of a fee on certain imports, not to exceed the costs of the TAA program; other sources of revenue would also contribute to the TAA fund. The Senate bill also seeks GATT approval for a fee on certain imports (not to exceed TAA costs or one percent of the value of imports). S 1420 is tougher than HR 3, however, in that if the GATT signatories fail to approve the duty, the United States would unilaterally impose the fee.

The administration charges that the fee amounts to a trade barrier that is probably GATT-illegal. Japan's Ministry of Foreign Affairs has also objected to it, noting that (if the GATT fails to approve the fee) the Senate proposal "may well be GATT-incompatible if done without making compensation to the contracting parties, and self-defeating if compensation is made (since compensation must equal revenues raised by the duty)."

Other Provisions

Several provisions that have received the most publicity are only contained in one version of the trade proposals. Some of these are very likely to be incorporated into the compromise bill; others will almost certainly be dropped or substantially modified. A few examples follow:

Toshiba Corp. - Following the disturbing revelations that Toshiba Machine Co., Ltd. had illegally sold sophisticated milling machines to the Soviet Union in violation of the COCOM (Coordinating Committee on Multilateral Export Controls) agreement, the Senate passed a provision banning imports from parent Toshiba Corp. and from Norway's Kongsberg Vaapenfabrikk (which sold the U.S.S.R. computer controls for the milling machines) for a two- to five-year period; future violators of COCOM would be subject to the same ban. House members are currently considering similar sanctions. It is safe to conclude that some provision will be incorporated in the trade package; how severe it will be may depend on the congressional response to the recently passed export control law amendments in Japan as well as current lobbying efforts by Toshiba Corp. and other concerned parties. The White House, for its part, has said that the Senate ban is too restrictive since it unnecessarily hinders the president's flexibility, would adversely affect the U.S.-Japan relationship, could hurt U.S. businesses that rely on the banned imports and would unfairly impose U.S. law on foreign countries.

Foreign Investment Reporting - Another controversial element in the House bill is Texas Democrat John Bryant's proposal that requires foreign investors to disclose information on certain U.S. investments. While proponents argue that the reporting would provide valuable information on the economy, many -- including administration officials -- fear that the requirement would scare investors away and slow U.S. economic growth. Worried trading partners were cheered to see the Senate soundly reject this proposal during the floor debate. In light of that defeat, it appears likely that the Bryant amendment will be struck from the bill, or at the very least watered down significantly.

Plant Closing Notification - This issue is close to the hearts of U.S. labor unions and its inclusion in the Senate bill was a coup for the labor movement. The provisions requires 60 days notice (with certain exceptions) of plant closings or mass layoffs for businesses with 100 or more full-time employees. The House Education and Labor Committee has approved an advance notification bill as well, but it is still unclear what proposal the House will bring to the conference.

The White House has lambasted the Senate proposal as "completely unacceptable" and stressed that such a requirement would diminish rather than improve the chances of an ailing plant's recovery. The threat of a veto has been mentioned in reference to this provision, although administration officials are reluctant to say that it is enough in and of itself to justify a veto. At this point it is difficult to pinpoint possible areas of White House-Congress compromise on this score. Given the enormous publicity and controversy the proposal has generated, however, it may play an important role in determining the White House reponse to the trade package.

Areas of Agreement

Despite enormous differences there are a few areas of agreement. The clearest example concerns intellectual property law (Section 337 of the Trade Act of 1930). Both bills eliminate the "injury test" by which petitioners must show that intellectual property violations cause substantial injury to domestic industry. The administration fully supports this change. Both bills also eliminate the present requirement that the injured industries must show that they are "economically" and "efficiently" operated.

Another area of at least partial agreement concerns export control laws. Although the White House has several objections to the proposed changes, officials approve of its objectives. Both bills would loosen controls placed on U.S. exports for national security purposes, especially with regard to goods that are generally available elsewhere. For example, HR 3 establishes a goal of a 40 percent reduction of the list of controlled items over a three-year period. The White House has endorsed the objective but stressed that its implementation must conform to the COCOM agreement. As a result it has balked at attempts to enact a quick or liberal decontrol process.

Sectoral Provisions

Early in the 100th Congress, Ways and Means Committee chairman Dan Rostenkowski and Finance Committee chairman Lloyd Bentsen -- now the co-chairmen of the conference committee -- announced that they would try to exclude sector-specific provisions from the trade bill. Only one exception was to be made, they said: trade in telecommunications goods and services. As the debate encompassed more and more issues, however, a number of sectoral items were incorporated into the bills, especially by other committees. Several of these were either targeted specifically or partially at Japan, including these:

- Financial services - The Federal Reserve Board and the Federal Reserve Bank of New York are prohibited from granting primary dealer status to foreign firms if U.S. companies do not have equal access to financial markets in the dealers' home countries. The provision would also withdraw privileges from foreign firms that are already primary dealers. (Contained in the House bill; similar provision in the Senate bill).

- Unfair maritime practices - Calls for Federal Maritime Commission investigations of maritime practices that disadvantage U.S. carriers and provides for retaliation. (Contained in both bills.)

- Flag ships for automobile carriers - Directs the administration to sign treaties with all countries that export at least 50,000 automobiles annually to the United States to eliminate unfair practices in the marine transport of automobiles. (Contained in both bills.)

- Kansai International Airport - Requires the USTR to initiate a Section 301 investigation of Japan's trade barriers against the U.S. construction industry. (Contained in both bills.)

- "Buy America" - Prohibits firms in countries that discriminate against U.S. goods and services in making government purchases from competing for U.S. government contracts. (Contained in the House bill.)

- Foreign investment controls - Instructs the White House to investigate the effects of proposed foreign mergers, acquisitions and takeovers (and in HR 3, joint ventures and licensing arrangements) on national security (and in HR 3, economic welfare). If the administration determines that the impact is adverse, HR 3 requires the president to block the action unless he determines separately that the effect is not adverse. S 1420 grants the president broader discretionary power to block such foreign activities. (While this is not strictly a sectoral provision, its passage stemmed from Fujitsu, Ltd.'s attempted takeover of Fairchild Semiconductor Corp.)

Other issues pending before the conference committee include export trading companies, small-business export promotion, the creation of an international debt facility, Customs practices, trade with non-market economies, pre-shipment inspection, the Foreign Corrupt Practices Act, the formation of a council on competitiveness, programs to improve education and worker retraining, export promotion programs and U.S. participation in the Multilateral Investment Guarantee agency.

A Japanese Reaction

Japan's position focuses on one point: the bill is incompatible with the General Agreement on Tariffs and Trade. Since the legislation is "strongly tinged with protectionism," according to the Japan Federation of Economic Organizations (Keidanren), its passage would endanger the new round of multilateral trade negotiations under the GATT. This point is made even more significant by the fact that the United States has been the major proponent of the new round. Keidanren goes on to warn that passage of the trade bill may injure this country's credibility during the negotiations -- an argument to which the White House is all too sensitive.

Japanese business leaders also claim that the bill's focus on reciprocity is inconsistent with the "widely accepted cardinal principles underpinning the GATT," i.e. most-favored-nation status, assurance of transparency and national treatment. By enacting reciprocity-based trade laws, Keidanren says, the United States would "significantly alter the very framework of the GATT."

Keidanren contends that the trade bill does not take into account the fact that other remedies have begun to rectify the trade imbalance. At a time when the U.S. trade deficit is showing signs of improvement -- in real, though not in current dollar terms -- and the unemployment rate is falling, protectionist legislation is not the answer, the organization says. Moreover, U.S. efforts to cut the federal budget deficit along with the recently announced Japanese stimulus package show that both countries are committed to redressing the trade problem.

These complaints are echoed by the Foreign Ministry, which says that its objections do not reflect purely national interests but are also based on the belief that the legislation runs counter to established international trade principles. In particular, the ministry says the bills are objectionable because they include country- and sector-specific measures; provisions that are incompatible with the GATT or prejudice the new round of negotiations; procedures that create "back doors to protectionism" by loosening the criteria for import relief or retaliatory measures; provisions that shorten the time frame for trade complaints or limit the president's options, thereby reducing the opportunity for due process and consideration of relevant factors; and changes dealing with unfair foreign trade practices that could inspire "mirror" legislation.

A Consumer's View

Standard rhetoric tells us that the United States needs a trade bill to safeguard the standard of living of the American people. This argument is usually buttressed with statistics outlining disturbing trade figures, shrinking export markets and the ever-increasing flood of foreign imports. Failed businesses, lost jobs and plant closings are cited to show the plight of the average American.

But groups that represent U.S. consumers stress that it is important to look at the trade bill from another angle as well: the costs associated with increased prices. The provisions of the trade bill that make it easier for U.S. industries to obtain relief -- or that increase the likelihood of U.S. retaliation for foreign unfair practices -- will lead to more U.S. trade restrictions that will impede the smooth flow of trade, effectively raise prices and encourage foreign counter-retaliation, they warn.

According to Citizens for a Sound Economy, a Washington-based public interest group, retaliation could end up costing Americans jobs rather than saving them. CSE representative Mary Alexander argues that U.S. trading partners will retaliate if the trade bill is passed and "the result will be a beggar-thy neighbor struggle, with nosediving trade, skyrocketing unemployment and a much lower standard of living. Over three million Americans work in export manufacturing industries, and almost half of all American cropland produces food for foreign tables. If our manufacturing and agricultural industries are crippled in a trade war, we will all lose."

A Status Report

Almost 200 legislators from 9 Senate and 14 House committees have been selected to participate in the conference committee that will iron out the differences between the House and Senate trade bills, HR 3 and S 1420 (see Appendix 3). Since a committee of this size will be too unwieldy to accomplish much as a whole, initial plans are to conduct most of the negotiations at the working-group level. Observers are still wondering whether the major decisions will rest with these groups or whether the two chairmen will reserve a significant amount of authority for the entire conference committee. Moreover, if the working groups are unable to agree, it may be necessary for the chairmen -- or the House and Senate leadership (Texas Democrat Jim Wright and West Virginia Democrat Robert Byrd) -- to play a greater role in developing a compromise.

Although the conference committee met very briefly before Congress recessed for the summer, it was strictly for organizational purposes. Since that time, any progresss that has been made has been due to behind-the-scenes negotiations. At present, however, the conference seems to be stalled. Because fiscal issues have a higher priority for the rest of the session, the question of when a compromise trade bill will face the House and Senate is open-ended for the time being. Additionally, although conferees had hoped to begin meeting early in September, there are reportedly ongoing jurisdictional battles over certain issues (although a recent House list of subconference groups indicates that progress has been made on this score.) Still another obstacle is the fact that the conferees from another committee -- this one considering legislation that would extend the public debt limit -- have also been appointed to the trade conference committee. Since work on the debt limit must be finished during this session, it will almost certainly take priority over trade and is bound to divert attention from HR 3. If time runs out the leadership may decide to hold HR 3 over into next year.

Indeed, Mr. Bentsen has reportedly acknowledged that possibility -- although he and Mr. Rostenkowski are still hoping to finish the bill before the end of the year. Postponing consideration until next year could turn it into a purely political vehicle, thus minimizing its chances of becoming law. Even though trade has historically not had the election value of domestic economic policy, it does carry a distinctive partisan element both in Congress and in the Democratic Congress-GOP administration relationship. The bipartisan cooperation that developed in the Senate Finance and House Ways and Means committees notwithstanding, congressional voting records show that Republicans are less likely to vote for hardline trade policies than Democrats. In a presidential election year, that element of partisanship could be enough to transform the trade debate into a political free-for-all.

Still both chairmen are committed to crafting a signable bill and will work to minimize any politicization of the process. The White House, too, has a strong incentive to developing a workable compromise in order to obtain a renewal of its negotiating authority. If the trade bill does not become law, the president has no assurance that Congress will act on the matter separately, especially if legislators believe that the administration vetoed a good bill.

Another incentive for the White House to work with Congress is the GOP's election concerns. Especially if trade issues become an integral part of the presidential campaign, the administration may not want to jeopardize the Republican party's chances of winning the presidency. In this case, the president may deem it wise to show American voters that the GOP is committed to improving the trade figures. Some observers discount that possibility, pointing out that trade has rarely been an important national election issue. On the other hand, however, if the tight congressional schedule delays the bill until 1988, legislators may try to make an issue of it.

It is still too early to predict the most likely course of events. The safest bet seems to be that in light of the other issues pending before Congress, the length of the two bills, the extreme complexity of the subconference system, and the scope of the differences among conferees and administration officials, the committee will probably not produce a compromise bill until late this year or 1988.

For further information, contact Eileen Marie Doherty.

* * * * * *

The views expressed in this report are those of the author and do not necessarily reflect those of the Japan Economic Institute.

Appendix 1: Votes On HR 3 By State

State	Partisan Breakdown of State's Representatives	"Yes" Votes	"No" Votes	Not Voting
Alabama	5 Dem; 2 Rep	5	2	0
Alaska	0 Dem; 1 Rep	0	1	0
Arizona	1 Dem; 4 Rep	1	4	0
Arkansas	3 Dem; 1 Rep	3	1	0
California	26 Dem; 18 Rep; 1 Vacant	23	19	3
Colorado	3 Dem; 3 Rep	3	2	1
Connecticut	3 Dem; 3 Rep	5	0	1
Delaware	1 Dem; 0 Rep	1	0	0
Florida	12 Dem; 7 Rep	12	7	0
Georgia	8 Dem; 2 Rep	8	2	0
Hawaii	1 Dem; 1 Rep	1	1	0
Idaho	1 Dem; 1 Rep	1	1	0
Illinois	13 Dem; 9 Rep	13	8	1
Indiana	6 Dem; 4 Rep	6	4	0
Iowa	2 Dem; 4 Rep	2	4	0
Kansas	2 Dem; 3 Rep	2	3	0
Kentucky	4 Dem; 3 Rep	5	2	0
Louisiana	5 Dem; 3 Rep	5	2	1
Maine	1 Dem; 1 Rep	2	0	0
Maryland	6 Dem; 2 Rep	7	1	0
Massachusetts	10 Dem; 1 Rep	11	0	0
Michigan	11 Dem; 7 Rep	17	1	0
Minnesota	5 Dem; 3 Rep	5	3	0
Mississippi	4 Dem; 1 Rep	4	1	0
Missouri	5 Dem; 4 Rep	6	3	0
Montana	1 Dem; 1 Rep	1	1	0
Nebraska	0 Dem; 3 Rep	1	2	0
Nevada	1 Dem; 1 Rep	1	1	0
N. Hampshire	0 Dem; 2 Rep	0	2	0
N. Jersey	8 Dem; 6 Rep	11	3	0
N. Mexico	1 Dem; 2 Rep	1	2	0
N. York	20 Dem; 14 Rep	23	11	0
N. Carolina	8 Dem; 3 Rep	11	0	0
N. Dakota	1 Dem; 0 Rep	1	0	0
Ohio	11 Dem; 10 Rep	14	7	0
Oklahoma	4 Dem; 2 Rep	4	2	0
Oregon	3 Dem; 2 Rep	2	3	0
Pennsylvania	12 Dem; 11 Rep	21	2	0
Rhode Island	1 Dem; 1 Rep	2	0	0
S. Carolina	4 Dem; 2 Rep	5	1	0
S. Dakota	1 Dem; 0 Rep	1	0	0
Tennessee	6 Dem; 3 Rep	7	2	0
Texas	17 Dem; 10 Rep	16	10	1
Utah	1 Dem; 2 Rep	1	2	0
Vermont	0 Dem; 1 Rep	1	0	0
Virginia	5 Dem; 5 Rep	5	5	0
Washington	5 Dem; 3 Rep	4	4	0
W. Virginia	4 Dem; 0 Rep	4	0	0
Wisconsin	5 Dem; 4 Rep	5	4	0
Wyoming	0 Dem; 1 Rep	0	1	0
Total:		290	137	8

Appendix 2: Votes On S 1420 By State

State	Partisan Breakdown of State's Representatives	"Yes" Votes	"No" Votes	Not Voting
Alabama	2 Dem; 0 Rep	2	0	0
Alaska	0 Dem; 2 Rep	1	1	0
Arizona	1 Dem; 1 Rep	1	1	0
Arkansas	2 Dem; 0 Rep	2	0	0
California	1 Dem; 1 Rep	1	1	0
Colorado	1 Dem; 1 Rep	1	1	0
Connecticut	1 Dem; 1 Rep	2	0	0
Delaware	1 Dem; 1 Rep	2	0	0
Florida	2 Dem; 0 Rep	2	0	0
Georgia	2 Dem; 0 Rep	2	0	0
Hawaii	2 Dem; 0 Rep	2	0	0
Idaho	0 Dem; 2 Rep	0	2	0
Illinois	2 Dem; 0 Rep	1	0	1
Indiana	0 Dem; 2 Rep	0	2	0
Iowa	1 Dem; 1 Rep	2	0	0
Kansas	0 Dem; 2 Rep	0	2	0
Kentucky	1 Dem; 1 Rep	1	1	0
Louisiana	2 Dem; 0 Rep	2	0	0
Maine	1 Dem; 1 Rep	2	0	0
Maryland	2 Dem; 0 Rep	2	0	0
Massachusetts	2 Dem; 0 Rep	2	0	0
Michigan	2 Dem; 0 Rep	2	0	0
Minnesota	0 Dem; 2 Rep	0	2	0
Mississippi	1 Dem; 1 Rep	1	1	0
Missouri	0 Dem; 2 Rep	2	0	0
Montana	2 Dem; 0 Rep	2	0	0
Nebraska	1 Dem; 1 Rep	2	0	0
Nevada	1 Dem; 1 Rep	1	1	0
N. Hampshire	0 Dem; 2 Rep	0	2	0
N. Jersey	2 Dem; 0 Rep	2	0	0
N. Mexico	1 Dem; 1 Rep	1	1	0
N. York	1 Dem; 1 Rep	2	0	0
N. Carolina	1 Dem; 1 Rep	1	1	0
N. Dakota	2 Dem; 0 Rep	2	0	0
Ohio	2 Dem; 0 Rep	2	0	0
Oklahoma	1 Dem; 1 Rep	2	0	0
Oregon	0 Dem; 2 Rep	1	1	0
Pennsylvania	0 Dem; 2 Rep	2	0	0
Rhode Island	1 Dem; 1 Rep	2	0	0
S. Carolina	1 Dem; 1 Rep	2	0	0
S. Dakota	1 Dem; 1 Rep	2	0	0
Tennessee	2 Dem; 0 Rep	1	0	1
Texas	1 Dem; 1 Rep	1	1	0
Utah	0 Dem; 2 Rep	0	2	0
Vermont	1 Dem; 1 Rep	1	1	0
Virginia	0 Dem; 2 Rep	2	0	0
Washington	1 Dem; 1 Rep	1	1	0
W. Virginia	2 Dem; 0 Rep	2	0	0
Wisconsin	1 Dem; 1 Rep	2	0	0
Wyoming	0 Dem; 2 Rep	0	2	0
Total:		71	27	2

Appendix 3: Participants in Trade Conference

House

Agriculture - E. (Kika) de la Garza (D, Tex.); George E. Brown, Jr. (D, Calif.); Pat Roberts (R, Kan.); Leon Panetta (D, Calif.); Dan Glickman (D, Kan.); Charles Stenholm (D, Tex.); Harold Volckmer (D, Mo.); Sid Morrison (R, Wash.); Steve Gunderson (R, Wis.); Fred Grandy (R, Iowa)

Armed Services - Les Aspin (D, Wis.); Samuel Stratton (D, N.Y.); Nicholas Mavroules (D, Mass.); Robert Badham (R, Calif.); Duncan Hunter (R, Calif.)

Banking, Finance and Urban Affairs - Fernand J. St Germain (D, R.I.); Walter E. Fauntroy (D, D.C.); Chalmers P. Wylie (R, Ohio); Robert Garcia (D, N.Y.); John LaFalce (D, N.Y.); Charles Schumer (D, N.Y.); Bruce Morrison (D, Conn.); Jim Leach (R, Iowa); Doug Bereuter (R, Neb.); Alex McMillan (N.C.); Mary Rose Oakar (D, Ohio); Bruce Vento (D, Minn.); Doug Barnard, Jr. (D, Ga.); Toby Roth (R, Wis.)

Education and Labor - Augustus Hawkins (D, Calif.); William Ford (D, Mich.); James Jeffords (R, Vt.); Mario Biaggi (D, N.Y.); Dale Kildee (D, Mich.); Pat Williams (D, Mont.); William Goodling (R, Pa.); Thomas Coleman (R, Mo.); Joseph Gaydos (D, Pa.); William Clay (D, Mo.); Matthew Martinez (D, Calif.); Marge Roukema (R, N.J.); Steve Gunderson (R, Wis.); Austin Murphy (D, Pa.); Major Owens (D, N.Y.); Steve Bartlett (R, Tex.)

Energy and Commerce - John Dingell (D, Mich.); James Florio (D, N.J.); Norman Lent (R, N.Y.); Edward Markey (D, Mass.); Philip Sharp (D, Ind.); Al Swift (D, Wash.); John Bryant (D, Tex.); Mike Synar (D, Okla.); Dennis Eckart (D, Ohio); Jim Slattery (D, Kan.); Carlos Moorhead (R, Calif.); Matthew Rinaldo (R, N.J.); William Dannemeyer (R, Calif.); Don Ritter (R, Pa.); Dan Coats (R, Ind.)

Foreign Affairs - Dante B. Fascell (D, Fla.); Don Bonker (D, Wash.); William Broomfield (R, Mich.); Daniel Mica (D, Fla.); Howard Berman (D, Calif.); Mel Levine (D, Calif.); James Bilbray (D, Nev.); Toby Roth (R, Wis.); Doug Bereuter (R, Neb.); John Miller (R, Wash.); Howard Wolpe (D, Mich.); Edward Feighan (D, Ohio); Robert Lagomarsino (R, Calif.); Sam Gejdenson (D, Conn.); Stephen Solarz (D, N.Y.); Benjamin Gilman (R, N.Y.)

Government Operations - Jack Brooks (D, Tex.); John Conyers, Jr. (D, Mich.); Frank Horton (R, N.Y.); Stephen Neal (D, N.C.); Barney Frank (D, Mass.); Ted Weiss (D, N.Y.); Robert Walker (R, Pa.); William Clinger, Jr. (R, Pa.)

Judiciary - Peter Rodino, Jr. (D, N.J.); Robert Kastenmeier (D, Wis.); Hamilton Fish, Jr. (R, N.Y.); Don Edwards (D, Calif.); William Hughes (D, N.J.); Pat Schroeder (D, Colo.); George Crockett, Jr. (D, Mich.); Carlos Moorhead (R, Calif.); Henry Hyde (R, Ill.); Daniel Lungren (R, Calif.); Bill McCollum (R, Fla.)

Merchant Marine and Fisheries - Walter B. Jones (D, N.C.); Mario Biaggi (D, N.Y.); Robert Davis (R, Mich.); Glenn Anderson (D, Calif.); Gerry Studds (D, Mass.); Don Bonker (D, Wash.); William Hughes (D, N.J.); Norman Lent (R, N.Y.); Don Young (R, Alaska); Norman Shumway (R, Calif.)

Public Works and Transportation - Norman Mineta (D, Calif.); James Oberstar (D, Minn.); John Paul Hammerschmidt (R, Ark.); Henry Nowak (D, N.Y.); Nick J. Rahall II (D, W.Va.); Douglas Applegate (D, Ohio); Ron de Lugo (D, Virgin Islands); Arlan Stangeland (R, Minn.); Newt Gingrich (R, Ga.); William Clinger, Jr. (R, Pa.)

Rules - Claude Pepper (D, Fla.); Joe Moakley (D, Mass.); Butler Derrick (D, S.C.); Tony Hall (D, Ohio); Alan Wheat (D, Mo.); Trent Lott (R, Miss.); Gene Taylor (R, Mo.)

Science, Space and Technology - Robert Roe (D, N.J.); Doug Walgren (D, Pa.); Manuel Lujan, Jr. (R, N.M.); Buddy MacKay (D, Fla.); Tim Valentine (D, N.C.); George E. Brown, Jr. (D, Calif.); James Scheuer (D, N.Y.); Marilyn Lloyd (D, Tenn.); Sid Morrison (R, Wash.); Don Ritter (R, Pa.); Constance Morella (R, Md.); Sherwood Boehlert (R, N.Y.); Robert Walker (R, Pa.); Jim Sensenbrenner, Jr. (R, Wis.); Claudine Schneider (R, R.I.); Dave McCurdy (D, Okla.); Dan Glickman (D, Kan.); Bill Nelson (D, Fla.); Tom McMillen (D, Md.); Jimmy Hayes (D, La.); Tom Lewis (R, Fla.); Ron Packard (R, Calif.); Jack Buechner (R, Mo.); Ralph Hall (D, Tex.); Robert Torricelli (D, N.J.)

Small Business - John LaFalce (D, N.Y.); Neal Smith (D, Iowa); Joseph McDade (R, Pa.); Ike Skelton (D, Mo.); Nicholas Mavroules (D, Mass.); James Bilbray (D, Nev.); Andy Ireland (R, Fla.); Silvio Conte (R, Mass.)

Ways and Means - Dan Rostenkowski (D, Ill.); Sam Gibbons (D, Fla.), John Duncan (R, Tenn.); Ed Jenkins (D, Ga.); Thomas Downey (D, N.Y.); Donald Pease (D, Ohio); Marty Russo (D, Ill.); Richard Gephardt (D, Mo.); Frank Guarini (D, N.J.); Robert Matsui (D, Calif.); Bill Archer (R, Tex.); Guy Vander Jagt (R, Mich.); Phil Crane (R, Ill.); William Frenzel (R, Minn.); Richard Schulze (R, Pa.); William Thomas (R, Calif.); Hal Daub (R, Neb.)

Senate

Agriculture, Nuturition and Forestry - Patrick Leahy (D, Vt.); John Melcher (D, Mont.); David Pryor (D, Ark.); Richard Lugar (R, Ind.); Thad Cochran (R, Miss.)

Banking, Housing and Urban Affairs - William Proxmire (D, Wis.); Paul Sarbanes (D, Md.); Alan Dixon (D, Ill.); Jake Garn (R, Utah); John Heinz (R, Pa.);

For consideration of Title X, Section 36: Alan Cranston (D, Calif.); Phil Gramm (R, Tex.)

For consideration of Title V: James Exon (D, Neb.); John Danforth (D, Mo.)

Commerce, Science and Transportation - Ernest Hollings (D, S.C.); Daniel Inouye (D, Hawaii); James Exon (D, Neb.); Donald Riegle, Jr. (D, Mich.); John Danforth (R, Mo.); Robert Packwood (R, Ore.); Larry Pressler (R, S.D.)

Finance - Lloyd Bentsen (D, Tex.); Spark Matsunaga (D, Hawaii); Daniel P. Moynihan (D, N.Y.); Max Baucus (D, Mont.); David Boren (D, Okla.); Robert Packwood (R, Ore.); John Chafee (R, R.I.); William Roth (R, Del.); John Danforth (R, Mo.)

Foreign Relations - Claiborne Pell (D, R.I.); Paul Sarbanes (D, Md.); Christopher Dodd (D, Conn.); Jesse Helms (R, N.C.); Richard Lugar (R, Ind.)

Governmental Affairs - John Glenn (D, Ohio); Lawton Chiles (D, Fla.); Jeff Bingaman (D, N.M.); William Roth (R, Del.); Ted Stevens (R, Alaska)

Judiciary - Dennis DeConcini (D, Ariz.); Patrick Leahy (D, Vt.); Orrin Hatch (R, Utah)

Labor and Human Resources - Edward Kennedy (D, Mass.); Claiborne Pell (D, R.I.); Howard Metzenbaum (D, Ohio); Barbara Mikulski (D, Md.); Brock Adams (D, Wash.); Orrin Hatch (R, Utah); Robert Stafford (R, Vt.); Dan Quayle (R, Ind.)

Small Business - Dale Bumpers (D. Ark.); Jim Sasser (D, Tenn.); Lowell Weicker (R, Conn.)

* * * * * *

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JAPAN · ECONOMIC · INSTITUTE

JEI REPORT

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IN THIS ISSUE:

Second Quarter Growth: The Pause That Refreshes? 1
Nakasone Takes Final Bow At United Nations 3
Nikaido Pulls Out Of LDP Presidential Contest 4
IBM-Fujitsu Software Pact Announced 5
Senate Committee Recommends Verity For Commerce Post 7
Notes: IMF Annual Report; Japan-EC Talks; U.S.-Japan Whaling Talks; Textile Bill 8

Second Quarter Growth: The Pause That Refreshes?

One would expect that reports showing Japan's economy was stagnant would lead to concern that a recession was imminent. Instead, the news has been greeted in Japan with sanguine comments and optimistic forecasts.

According to Economic Planning Agency figures (see Table), the total output of final goods and services adjusted for inflation and seasonal factors increased a tiny 0.008 percent during April-June 1987. The flat performance would be disappointing under normal circumstances, especially following on the heels of a strong 5.3 percent annualized growth rate for the January-March quarter.

Japan's Real Gross National Product at Constant (1985) Prices

(in billions of yen, seasonally adjusted, quarterly totals and rates of growth at annual rates)

	FY 1985	FY 1986	July-September 1986	October-December 1986	January-March 1987	April-June 1987
Gross National Product	Y293,332.7 (4.3%)	Y300,948.1 (2.6%)	Y299,438.0 (3.0%)	Y301,619.4 (2.9%)	Y305,518.5 (5.3%)	Y305,543.9 (0.0%)
Personal Consumption Spending	162,999.0 (2.6%)	167,894.8 (3.0%)	168,282.5 (5.3%)	167,048.0 (-2.9%)	170,136.9 (7.6%)	171,248.4 (2.6%)
Private Residential Construction	14,107.9 (2.9%)	15,956.5 (13.1%)	15,851.9 (31.3%)	16,625.4 (21.0%)	16,728.8 (2.5%)	17,440.3 (18.1%)
Private Fixed Nonresidential Investment	53,760.3 (12.9%)	56,369.3 (4.9%)	55,471.9 (2.0%)	56,617.8 (8.5%)	58,049.9 (10.5%)	58,813.2 (5.3%)
Change in Business Inventories	2,016.2 (8.7%)	814.8 (-59.6%)	920.4 (329.1%)	1,351.4 (364.8%)	351.0 (-817.2%)	964.3 (5,596.7%)
Government Current Expenditures	27,240.9 (1.9%)	29,098.8 (6.8%)	28,058.0 (5.0%)	32,065.4 (70.6%)	28,556.7 (-37.1%)	28,797.7 (3.4%)
Government Fixed Investment	20,772.5 (-6.4%)	22,289.7 (7.3%)	22,180.2 (7.4%)	22,428.9 (4.6%)	22,662.8 (4.2%)	23,085.2 (7.7%)
Change in Government Inventories	297.9 (*)	826.3 (*)	1,795.1 (*)	-1,866.9 (*)	121.4 (*)	-215.5 (*)
Net External Sector	12,138.1 (19.9%)	7,697.9 (-36.6%)	6,878.0 (-35.9%)	7,349.4 (30.4%)	8,911.0 (116.1%)	5,410.3 (-276.4%)
Exports of Goods and Services and Factor Income Received	54,496.6 (1.8%)	52,789.4 (-3.1%)	52,640.0 (-3.0%)	52,127.4 (-3.8%)	53,402.6 (10.2%)	52,547.9 (-6.6%)
Imports of Goods and Services and Factor Income Paid	42,358.6 (-2.4%)	45,091.5 (6.5%)	45,762.0 (3.6%)	44,778.0 (-8.3%)	44,491.6 (-2.6%)	47,137.6 (26.0%)

*Cannot be calculated or meaningless.

Source: Economic Planning Agency

The results in the second quarter reflected sharp changes in five components of GNP, and particularly in domestic demand. Consumer spending was perhaps the most worrisome area since it accounts for well over half of total output. The plunge from the preceding period's 7.6 percent real growth rate to just 2.6 percent could be blamed on cautious consumer psychology. Nevertheless, the positive showing was better than the contraction recorded during the last quarter of 1986. Residential construction returned to boom levels after a slow first three months, spurred by rising land values and attractive interest rates. The rate of growth of business spending for plant and equipment, on the other hand, fell by almost half, a victim of the yen's appreciation and a loss of international competitiveness. While current expenditures by the public sector were restrained to just 3.4 percent growth, government fixed investment increased by a moderately fast rate. Together, real domestic demand in the April-June quarter grew at an annual rate of 4.4 percent, up from 3.2 percent in 1987's first three months.

The net external sector, however, showed a sharp contraction in the second quarter -- sharp enough to cancel the impact of domestic growth. Exports in volume terms fell at an annualized rate of 6.6 percent, contrasting sharply with the previous period's 10.2 percent advance but resuming the pattern of contraction that began in 1986. Real imports, in contrast, surged 26 percent, partly due to a slight rise in crude oil prices. Trade statistics do show a rise in imports of manufactured goods, however, holding out some hope that the decline in the nation's trade surplus will be a sustained one.

Japanese analysts point to the sharp shifts in the growth rates of the various GNP components as evidence that the economy is undergoing a structural adjustment away from export dependence and toward domestic demand. Most analysts expect the trend to be even more pronounced when the July-September figures are released since they will show the impact of the government's fiscal stimulus program. Leading economic indicators are also signaling an upturn, adding to the optimism. On the other hand, the April-June results will make it very difficult for the economy to achieve the government's 3.5 percent real growth outlook for FY 1987. Although government analysts are still hopeful, private economists suggest that the economy will grow 3 percent at most. In light of the country's increasingly important role in global growth, the Japanese are not the only ones with a stake in sound economic growth.

Jon Choy

Nakasone Takes Final Bow At United Nations

Prime Minister Yasuhiro Nakasone delivered a farewell foreign policy address to the United Nations General Assembly September 21, pledging further efforts by Japan to help eliminate the sources of global instability. While the tone and thrust of the address differed little from his previous U.N. speech in October 1985, the prime minister did call for unimpeded information flows among nations and suggested that both North and South Korea be seated simultaneously in the General Assembly as a step toward reducing frictions and instability on the peninsula.

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JEI

REPORT

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ECONOMIC RESTRUCTURING IN JAPAN

Summary

During the past six years there has been a sharp rise in the manufacturing sector's share of Japan's economy. The increase paralleled a similar expansion in exports that boosted the nation's trade surplus to record levels. A recent report by the Bank of Japan concluded that an overhaul of the country's economic structure is necessary to reduce the trade surplus to an internationally acceptable level. Although many observers have criticized the pace of reform, steady progress has been made as the private sector has adjusted to the realignment of exchange rates. The strong yen has promoted a shift of productive resources from the manufacturing sector to nonmanufacturing and there has been a surge in direct foreign investment by Japanese firms.

Some business leaders, however, warn that Japan risks repeating the hollowing-out process they believe has taken place in the United States. In fact, manufacturing's share of real gross domestic product has remained roughly constant in the United States during the past 25 years. Economic restructuring in Japan should benefit consumers and improve the quality of life. It may, though, be accompanied by negative side effects, such as increased unemployment and an adverse impact on those regions that depend on export industries.

The Rise of the Service Sector

The service sector plays a major role in the industrial countries. Of the 20 member nations of the Organization for Economic Cooperation and Development listed in Table 1, goods accounted for over 50 percent of gross domestic product from 1980 to 1984 in only one country -- Turkey. In some of the wealthy nations of North America and Western Europe, its share is only about one-third.

The link between a country's income level and the size of its service sector shown in Table 1 suggests that a service-oriented economy is an inevitable result of economic growth. As income increases, households generally spend a smaller share of their budget on food and consumer durables and develop new tastes for services. And producers emphasize information and services to boost sales and reduce costs. Some analysts, though, view the rising importance of the service sector as an ominous trend that threatens to replace manufacturing employment with menial, low-paying jobs. This bias goes as far back as Adam Smith, who defined services as things that "perish in the very instant of their performance," in contrast to more tangible forms of wealth. The service sector, though, includes many high-skill, technologically advanced enterprises such as telecommunications and data processing.

Still, in the OECD countries the shares of goods and services are equal if the government sector is excluded. Moreover, part of the reported decline in manufacturing is a statistical aberration resulting from increased specialization common to advanced economies. Such activities as data processing and security, which were formerly performed by manufacturers for themselves, are now contracted out to the service sector. According to one study, at least half of all market services are directly linked to the production of goods rather than purchased directly by consumers.*

Japan's service sector accounts for a relatively small share of GDP despite the country's high income level -- largely because the manufacturing sector has grown more rapidly during the past 25 years than in any other OECD country. The distribution of labor also indicates the relative importance of the goods-producing sector, which accounts for just under half of employment in Japan compared to less than one-third in the United States (see Table 2).

The appreciation of the yen since February 1985, though, has had a serious impact on many of Japan's leading industries. The country's five major steel producers, for example, have announced plans to close eight blast furnaces and reduce their workforce by 13 percent by 1990, while Sony Corp. announced plans last month to move one-fourth of its production capacity overseas. The U.S. assembly plants operated by Japanese automotive makers, which will be capable of producing at least 1.7 million cars and trucks a year by 1990 (see JEI Report No. 11A, March 20, 1987), may reduce the size of the domestic industry. And the decline of the textile industry has depressed regions of the country.

Much of the increased foreign competition is coming from the newly industrializing countries of Asia. During the first half of the year, for example, South Korea overtook Japan as the world's largest shipbuilder and it

*Derek Blades, "Goods and Services in OECD Economies," OECD Economic Studies, Spring 1987.

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Table 1: Share of Total Value-Added by Sector in OECD Countries

(1980-84 average)

	Goods					Services					
Country	Total	Primary Products*	Manu-facturing	Con-struction	Other**	Total	Whole-sale, Retail	Transport, Communi-cations	Finance, Real Estate	Other	Non-market Services***
Denmark	34%	6%	19%	6%	2%	66%	14%	8%	16%	5%	24%
United States	35	2	22	4	7	65	17	6	21	8	13
Belgium	36	2	23	6	4	64	n.a.	8	13	n.a.	15
Canada	38	4	19	6	10	62	n.a.	8	13	n.a.	20
Sweden	39	4	24	8	3	61	12	7	13	4	26
Netherlands	39	4	18	7	9	61	13	6	15	12	15
Luxembourg	39	3	27	7	2	61	16	5	12	14	13
France	41	4	27	7	3	59	13	6	18	9	14
New Zealand	41	9	23	5	4	59	21	8	14	3	13
Britain	42	2	24	6	10	58	12	7	18	5	16
Japan	43	3	28	8	3	57	n.a.	6	14	n.a.	10
Austria	44	4	29	8	4	56	17	6	14	3	15
Germany	45	2	33	6	4	55	11	6	n.a.	n.a.	14
Italy	46	6	28	8	4	54	15	6	n.a.	n.a.	14
Finland	46	9	26	8	3	54	11	8	14	4	17
Norway	46	4	15	7	21	54	14	10	12	5	14
Spain	47	9	26	8	4	53	17	7	9	10	10
Portugal	48	10	28	7	3	53	21	5	8	7	12
Greece	48	18	19	7	4	52	13	8	n.a.	n.a.	10
Turkey	53	20	24	4	4	47	16	10	7	6	8
Mean	43	6	24	7	6	57	15	7	14	7	15

*Agriculture, forestry and fishing.
**Includes electricity, gas and water plus mining and quarrying.
***Includes services provided by government and non-profit organizations.

Source: Derek Blades, "Goods and Services in OECD Economies," OECD Economic Studies, Spring 1987.

Table 2: Share of Employment by Sector in OECD Countries

(1980-84 average)

	Goods					Services					
Country	Total	Primary Products*	Manu-facturing	Con-struction	Other**	Total	Whole-Sale, Retail	Transport, Communi-cations	Finance, Real Estate	Other	Non-market Services***
United States	30	4	19	5	2	70	23	4	11	15	17
Australia	35	6	19	7	3	65	20	8	9	23	5
Belgium	35	3	23	7	2	65	19	7	n.a.	n.a.	22
Netherlands	35	6	20	8	1	66	18	7	8	16	17
Sweden	35	5	22	7	1	65	14	7	5	6	33
Denmark	36	8	20	7	1	64	13	7	8	5	31
Britain	37	3	n.a.	n.a.	3	64	n.a.	6	n.a.	n.a.	22
Norway	39	8	21	8	2	61	15	10	5	8	23
France	41	8	23	8	2	59	16	6	7	11	19
Luxembourg	42	5	26	10	1	58	n.a.	7	5	n.a.	13
Finland	46	13	24	8	1	54	14	7	6	4	23
Japan	47	12	24	10	1	53	18	5	4	17	9
Iceland	47	12	24	10	1	53	13	7	6	7	20
Italy	47	12	26	8	1	52	20	6	n.a.	n.a.	17
Germany	48	5	33	8	2	51	16	6	3	8	18
Portugal	54	23	20	10	1	45	12	4	2	15	12
Mean	41	8	23	8	2	59	17	7	6	11	19

*Agriculture, forestry and fishing.
**Includes electricity, gas and water plus mining and quarrying.
***Includes services provided by government and non-profit organizations.

Source: Derek Blades, "Goods and Services in OECD Economies," OECD Economic Studies, Spring 1987.

exported more televisions to the United States than Japan. The Ministry of International Trade and Industry expects imports of steel, largely from Korea and Taiwan, to rise 20 percent this year. In addition, an estimated 80 Japanese companies built manufacturing facilities in the NICs in 1986.

Many analysts fear that these trends will reduce Japanese manufacturing firms to the role of marketing output produced abroad -- a pattern that they see in the United States. According to Sony chairman Akio Morita, "The United States is abandoning its status as an industrial power."

Is the United States Deindustrializing?

The manufacturing sector in this country has been hampered by slow productivity growth, an erosion in technological advantage and a failure to match the product quality provided by foreign producers. These problems, combined with the deterioration in the trade deficit to a record $156.2 billion last year, have created the impression that the United States is deindustrializing. Some observers point to the decline in the manufacturing sector's share of gross national product from over 27 percent in the 1960s to 20.7 percent in the first half of the 1980s as evidence (see Table 3). The decline in manufacturing employment by almost 2 million from its 1979 peak is also viewed as another symptom of the problem.

Table 3: U.S. Gross Domestic Product by Sector

A. Nominal

Period Average	Primary Products*	Construction	Mining	Manufacturing	Services	Government
1960-64	3.8%	4.8%	2.3%	27.9%	50.2%	11.0%
1965-69	3.1	5.0	1.9	27.7	50.3	12.0
1970-74	3.5	5.2	1.9	24.2	52.0	13.2
1975-79	3.2	5.1	2.7	23.1	53.4	12.5
1980-85	2.6	4.6	3.8	20.7	56.2	12.1

B. Real

Period Average	Primary Products*	Construction	Mining	Manufacturing	Services	Government
1960-64	3.7%	9.7%	5.5%	20.9%	45.8%	14.4%
1965-69	2.9	8.5	5.3	22.3	46.9	14.1
1970-74	2.7	6.5	5.2	21.8	50.5	13.3
1975-79	2.5	5.6	4.4	21.8	53.2	12.5
1980-85	2.6	4.7	4.1	21.2	55.5	11.9

Source: Council of Economic Advisers, Economic Report of the President.

In fact, the decline in manufacturing's nominal share is a result of a lower rate of inflation in that sector. While the price of services increased almost five times during the past 26 years, the price of goods (excluding food) rose less than three-fold. In real terms manufacturing's share has remained constant in the 20 to 22 percent range. Industrial production has performed strongly during the current expansion, increasing 21.3 percent between 1982 and 1986. During the first half of the 1980s, output increased faster in the United States than in any other major industrial country except Japan (see Table 4).

Table 4: GDP and Industrial Production Growth in the Major Industrial Nations

(average annual rate of change)

	1960-73		1973-80		1980-85	
Country	GDP	Industrial Production	GDP	Industrial Production	GDP	Industrial Production
United States	3.8%	5.2%	2.1%	1.8%	2.4%	2.6%
Japan	9.2	11.1	3.6	2.4	3.8	3.9
Germany	4.3	5.0	2.2	1.1	1.3	1.0
France	5.4	5.2	2.8	1.7	1.1	-0.2
Britain	3.1	2.9	0.9	0.1	1.9	1.6

Source: Organization for Economic Cooperation and Development, National Accounts, 1960-85.

Increasing labor productivity has allowed manufacturing employment to decline while output's share of GDP remained constant. The decline does not signal the inability of U.S. producers to compete; instead, it is part of the process by which firms remain internationally competitive. In many ways this trend resembles changes that occurred in agriculture, which employed about one-third of this nation's labor force in 1910. Today, its share is only 3 percent.

Despite the many concerns about industrial competitiveness, it is clear that the U.S. manufacturing sector cannot disappear, given the country's status as the world's biggest debtor nation. The large U.S. external deficit is made possible by the willingness of foreign investors to increase their net lending and investment in the United States. The huge imbalance cannot continue indefinitely. Once foreign investors refuse to continue making large net investments in this country, the U.S. current account, which includes merchandise trade, services (including investment income) and transfers, will have to balance. Moreover, the United States will have to run a trade surplus to service its foreign debt, which could reach as high as $600 billion by the end of the decade. While trade includes services and agricultural products, only trade in manufactured goods is large enough to produce the required improvement in the trade balance.

Although deindustrialization is not a serious threat, efforts to improve U.S. competitiveness are important. If U.S productivity, technology and product quality do not keep pace with foreign producers, this country will have to reduce the price of its manufactured goods on world markets. A substantial deterioration in the terms of trade would cut deeply into the U.S. standard of living.

Trends in Japan

Compared to the United States, manufacturing and construction account for a larger share of GDP in Japan, while the government and service sector shares are smaller (see Table 5). Both countries, though, experienced similar changes in the 1970s; the shares of primary products and construction declined, while manufacturing remained steady in real terms. Industrial production, which grew substantially faster than GDP in Japan's high growth period, fell behind after the first oil shock, as it did in the other major industrial countries.

Table 5: Japan's Gross Domestic Product by Sector

A. Nominal

Period Average	Primary Products*	Construction	Mining	Manufacturing	Services	Government
1970-74	5.7%	8.3%	0.7%	34.9%	43.4%	7.0%
1975-79	5.0	9.2	0.5	29.9	46.7	8.7
1980-85	3.4	8.4	0.5	29.3	49.9	8.5

B. Real

Period Average	Primary Products*	Construction	Mining	Manufacturing	Services	Government
1970-74	5.6	11.2	0.7	27.0	46.8	8.7
1975-79	4.6	10.4	0.6	27.2	48.4	8.8
1980-85	3.5	8.1	0.5	31.6	48.0	8.3

Source: Economic Planning Agency, Annual Report on National Accounts.

Japan's export-led expansion in the 1980s, though, boosted manufacturing's share of real GDP by 4.4 percentage points. This increase paralleled the rise in exports from 12.3 percent of real GDP in the last half of the 1970s to 15.6 percent during the 1980-85 period. The increase in manufacturing output raised employment in that sector by close to 1 million jobs in contrast to the decline recorded in the United States (see Table 6).

The surge in Japanese exports culminated in a record $94.1 billion current account surplus in FY 1986, the equivalent of 4.5 percent of GNP, and the highest figure recorded by an industrial country in the postwar era. Meanwhile, the United States, which accounts for almost 40 percent of Japan's exports, experienced unprecedented trade deficits. Most economists identify U.S. fiscal policy as the primary cause of recent trade imbalances. Large budget deficits boosted U.S. interest rates, which in turn raised the value of the dollar, leading to a deterioration in the U.S. balance with all regions of the world except the Organization of Petroleum Exporting Countries. The United States accounted for more than half the rise in Japan's trade surplus between 1981 and 1986, while OPEC was responsible for about a quarter of the increase, reflecting the declining price of oil.

Table 6: Changes in Japan's Labor Force

(thousands of workers; percentage change from year-earlier figure)

	Agriculture, Forestry & Fishing	Change	Manu-facturing	Change	Nonmanu-facturing*	Change
1980	5,770	-5.9%	13,670	2.6%	35,920	1.6%
1981	5,570	-3.5	13,850	1.3	36,390	1.3
1982	5,480	-1.6	13,800	-0.4	37,100	2.0
1983	5,310	-3.1	14,060	1.9	37,950	2.3
1984	5,120	-3.6	14,380	2.3	38,170	0.6
1985	5,090	-0.6	14,530	1.0	38,540	1.0
1986	4,950	-2.8	14,440	-0.6	39,140	1.6
1987 January	3,920	0.2	14,300	-2.6	38,930	1.6
February	3,870	0.8	14,220	-2.9	38,940	1.4
March	4,250	-0.7	14,190	-1.9	39,540	2.0
April	5,090	-3.6	14,070	-3.6	40,140	3.0
May	5,450	-3.7	14,100	-1.5	40,210	2.5
June	5,400	-3.2	14,140	-1.0	40,420	2.5

*Includes services, mining, construction, utilities, transportation, communications, wholesale and retail trade, finance, insurance, real estate and government workers.

Source: Management and Coordination Agency

The sharp rise in the yen helped reduce Japan's export volume 1.4 percent in 1986 and bring imports up 13.3 percent. The volume changes will eventually reduce the surplus in dollar terms, which in the April-June 1987 period fell below the year-earlier level for the first time in 18 quarters. A recent study by the Bank of Japan concluded, however, that the impact of the yen's appreciation on trade volumes will begin to fade in the near future, leaving Japan with a sizable nominal surplus. The report warned that "In order to reduce the surplus to an internationally acceptable level in the long run, therefore, an overhaul of Japan's economic structure is required in such a way as to lessen its chronic dependence on external demand."

Economic Restructuring in Japan

The Maekawa Report, a series of recommendations to transform the economy that was drawn up in 1986 by a private commission established by Prime Minister Yasuhiro Nakasone, has received widespread attention both in Japan and abroad. U.S. officials have urged Tokyo to pursue policies, including those recommended in the report, to restructure its economy and reduce its trade surplus. The report has been attacked, though, by some economists in Japan who argue that since the basic cause of the imbalance is U.S. macroeconomic policy, the solution lies in Washington. Moreover, some note that Japan's surplus is not unique; Britain prior to World War I and the United States in the immediate postwar period also ran large external surpluses.

Japan's surplus, though, does pose problems for the world economy. The International Monetary Fund's annual report, released in September, warned that if the U.S. trade deficit and Japanese and German surpluses persist for much longer, there would be "serious implications for growth throughout the world economy." The large Japanese trade imbalance has been accompanied by an unsustainable increase in the U.S. foreign debt. In addition, the success of Japanese exporters has created protectionist pressures in the United States and the European Community that threaten the world trading system. Tokyo's 1987 annual economic white paper warned that Japan risks isolation in the international community if it fails to reduce its trade surplus.

The government has taken measures to promote the restructuring of the economy. The tax reform package passed by the lower house in September revised the preferential tax treatment for saving. In addition, the economic stimulus package announced in May included a substantial increase in public works spending. Other important policies that would promote restructuring include changes in tax and land zoning policies to increase the supply of land and encourage housing construction; a reform of agricultural policies to reduce food prices; and policies to streamline the distribution system, which would also reduce consumer prices.

Despite the steps that have already been taken, many observers have criticized the pace of government efforts to transform the economic structure, giving the impression that restructuring has stalled. In fact, steady progress is taking place as the private sector responds to the high yen. The rise of the yen has affected the composition of demand and the relative profitability of different industries. Profits in the manufacturing sector have been depressed by the decision to pass on only about half of the yen's appreciation in export prices in an effort to maintain market share abroad (see JEI Report No. 12B, March 27, 1987). Meanwhile, the nonmanufacturing sector has not been forced to lower its prices, while benefiting from cheaper inputs, particularly oil, and lower interest rates. The relative profitability of nonmanufacturing has attracted a surge of capital investment in that sector. According to the Japan Development Bank, investment by nonmanufacturing firms will increase 7 percent in FY 1987 following a 12.1 percent rise last year; in the manufacturing sector, though, investment is expected to fall for the second straight year.

The composition of demand also influences the allocation of labor. According to one study, more than half of the jobs created by exports are in manufacturing, while public investment boosts employment in the construction industry (see Table 7). Cost-cutting efforts by firms facing falling export volume reduced the number of manufacturing jobs in June 1987 about 1 percent below a year earlier, while steady growth in domestic demand boosted nonmanufacturing employment by 2.5 percent.

The surge in foreign direct investment is another element of the restructuring process. Overseas investment in manufacturing rose 61.8 percent in FY 1986 to $3.8 billion (see JEI Report No. 25B, July 2, 1987). Some observers expect the share of production overseas by Japanese firms to reach 10 percent by the mid-1990s. Currently, the figure is under 5 percent, while the U.S. share is 23 percent and West Germany's is 19 percent.

Table 7: Jobs Generated by Different Categories of Final Demand

	Personal Consumption	Private Sector Capital Investment	Public Sector Capital Formation	Exports
Agriculture	21.6%	3.0%	1.4%	4.9%
Mining	0.1	0.5	1.2	0.5
Manufacturing	17.1	36.8	23.1	56.7
Construction	0.6	28.3	52.4	0.5
Services	60.6	31.6	21.8	37.4
Total	100.0	100.0	100.0	100.0

Source: Hirohide Tanaka, "Jobs in Danger from the Yen Shock," Economic Eye, March 1987.

The shift of labor and capital away from manufacturing and the move to overseas production should reduce the relative importance of manufacturing in Japan's economy. The growth of other sectors, such as services and construction, should make Japan's economy less export-oriented, while increasing the demand for imports. Manufactured imports increased 34.7 percent in FY 1986 to account for a record 44.1 percent of total imports.

According to the economic white paper, economic restructuring should improve the quality of life in Japan, while reducing the nation's trade surplus. There may be significant adjustment costs, however, such as higher unemployment. MITI estimates that 800,000 jobs will be lost by the turn of the century if manufacturing investment abroad grows at an annual rate of 20 percent. The ongoing business retrenchment has forced employers to rethink such traditional labor practices as lifelong employment and seniority-based wages. Bunpei Otsuki, chairman of the Japan Federation of Employers Association, believes the disruptive effect on labor-management relations is the most serious threat to Japan's economic future.

The government has set 4 percent real growth as the rate necessary to avoid a serious unemployment problem. Even with successful macroeconomic policies, however, there is likely to be a mismatch between the labor skills demanded by the service sector and the skills of workers leaving manufacturing. A recent report by the Economic Planning Agency warned that the unemployment rate is likely to rise above 5 percent unless Japanese workers are more broadly educated and have greater skills.

For further information, contact Randall S. Jones.

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The views expressed in this report are those of the author and do not necessarily reflect those of the Japan Economic Institute.

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IN THIS ISSUE:

Kurihara Meets Weinberger, Nixes Domestic FSX 1

Japan's Economy Inching Up 3

Tokyo Reaffirms Its Role In Resolving Debt Crisis 4

Senate Criticizes Japan's Relations With Vietnam 5

Japanese Truck Makers' Bumpy U.S. Road 7

JEI Personnel Changes 8

Kurihara Meets Weinberger, Nixes Domestic FSX

Yuko Kurihara, the head of the Japan Defense Agency, told Secretary of Defense Caspar Weinberger October 2 that Japan has opted for either enhanced F-15s or modified F-16s instead of a domestically designed aircraft for its next-generation fighter support plane -- codenamed the FSX program. While numerous details must still be worked out, the choice has resolved a dispute that has threatened at times to poison the bilateral defense relationship.

The announcement came despite heavy lobbying by Japanese defense contractors which saw the FSX as an opportunity to strengthen and expand their design and manufacturing capabilities in a critical industrial sector. The decision to proceed with a U.S. design should reduce the spillover of trade frictions into the defense realm. Political pressures accelerated dramatically last March when Missouri Republican John Danforth wrote to the White House the global debt crisis. Maintaining that a workable solution must involve market-oriented strategies, Mr. Sumita underscored the importance of maintaining a steady flow of financial resources to debtor countries. In order to accomplish this, he advocated several measures.

First, the debtor nations should adopt "market-oriented debt and development strategies" that involve the private sector. He mentioned support for policies conducive to financial and capital markets; encouragement of higher savings ratios; restraints on capital flight; and the creation of a climate that is hospitable to private direct investment. As important as these domestic economic policies are, Mr. Sumita urged international institutions, private banks and the developed countries to cooperate to resolve the debt crisis "on a case-by-case basis."

In addition, the BOJ governor urged approval of the Multilateral Investment Guarantee Agency -- a new organization that would guarantee foreign direct investment in member developing countries against noncommercial risks (see JEI Report No. 22B, June 12, 1987). To date, Japan is the only developed country that has ratified the convention that establishes MIGA. The likelihood of U.S. participation is still uncertain, causing some uneasiness abroad that the agency may fall by the wayside. Mr. Sumita applauded the work of the International Finance Corp. in finding ways to transfer private capital to the developing nations and its role in establishing investment funds, and urged it to play a "central role" in facilitating debt-equity swaps.

Japan intends to respond to the debt crisis in several ways. The centerpiece of its strategy is a $30 billion plan -- $10 billion in subscriptions to multilateral institutions and a $20 billion fund designed to recycle a portion of Japan's current account surplus to the developing nations (see JEI Report No. 21B, June 5, 1987). Mr. Sumita said that Tokyo is prepared to make other contributions as well. He endorsed an expansion of the financial base of the IMF through a quota increase and said that Tokyo would contribute in a manner "commensurate with its economic abilities." Furthermore, he cited Tokyo's pledge to disburse roughly $500 million in grants to low-income developing countries, especially in the sub-Saharan region.

In a related development, Foreign Minister Tadashi Kuranari took Tokyo's policy to Central America. During a late September visit he pledged increased Japanese aid to help stabilize the region, which is slated to receive approximately 20 percent of the $20 billion in recycled funds. Mr. Kuranari also unveiled a diplomatic plan to complement the Central American peace plan signed by Nicaragua, Guatemala, Honduras, El Salvador and Costa Rica in August. The plan focuses on Japanese economic assistance and support for present efforts to bring democracy to the region.

Eileen M. Doherty

Senate Criticizes Japan's Relations With Vietnam

On September 29 the Senate adopted an amendment to S 1174 (the Defense Department authorization bill) urging Japan to reduce its economic ties with Vietnam. Sen. Robert Kasten's (R, Wis.) resolution establishes a Senate finding that Japan's trade with Vietnam has expanded steadily since 1982 and the

Japanese government has failed to discourage private investment in that country. These findings are especially reprehensible, according to Sen. Kasten, in light of Tokyo's 1979 agreement to participate with Western nations in a trade and aid embargo against Vietnam (to protest the occupation of Cambodia). The amendment calls on Japan to discourage trade that would promote Vietnam's economic development. Specifically, it urges Japan to discontinue sales of equipment that enhance (1) oil and exploration projects, (2) forestry and fishery production, (3) production of commodities for light industries and (4) export capacity.

Kyodo news service quoted Ministry of Foreign Affairs spokesman Yoshifumi Matsuda as saying that the resolution is "regrettable" since, in yen terms, Japan's trade with Vietnam actually decreased in 1986. As the table below indicates, two-way trade did expand during the 1983-85 period, but the 1986 figure fell 9.6 percent from the year earlier. But since the Senate cites trade figures in dollar terms, its results are quite different. In 1986, for example, Japan's trade with Vietnam expanded by 27.2 percent in dollar terms as the yen appreciated by 26 percent over the course of the year.

Japan's Trade With Vietnam, 1981-86

(in billions of yen)

	1981	1982	1983	1984	1985	1986
Exports	Y24.0	Y23.2	Y28.2	Y28.1	Y35.3	Y31.8
Imports	8.2	8.9	8.9	12.1	15.6	14.2
Trade Balance	15.8	14.3	19.3	16.0	19.7	17.6
Total Trade	32.2	32.1	37.1	40.2	50.9	46.0
Percentage Change	--	0.3%	15.6%	8.4%	26.6%	-9.6%

Source: Japan Tariff Association, The Summary Report: Trade of Japan

The amendment was sparked partly by an announcement that Honda Motor Co., Ltd. planned to sell knock-down motorcycle kits to Vietnam. Legislators feared that the Vietnamese would be able to use such kits to build military vehicles. Largely in response to these congressional complaints, Honda quickly reversed its decision. A Honda official quoted in Automotive News said that "while our review of our business relationships in Vietnam, Cambodia and Laos shows that we have acted well within the policies of the Japanese government, we feel that due to our position as a major automobile manufacturer in the United States, we should honor the policy considerations of the U.S. government." Sen. Kasten acknowledged the move but stressed that the problem involves more than the activities of one company. He suggested that Tokyo should tighten policies covering all Japanese trade with Vietnam.

Eileen M. Doherty

10/29/87 R5650 - 2

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JAPAN'S GROWTH PERFORMANCE OVER THE LAST DECADE
A STUDY BY BRUCE KASMAN OF THE FEDERAL RESERVE BANK OF NEW YORK*

Summary

Why has economic growth in Japan, particularly the expansion of domestic demand, slowed down in the 1980s? Given the Reagan administration's recurrent calls for faster internal Japanese growth, this question is not merely of academic interest. Bruce Kasman of the Federal Reserve Bank of New York's Research and Statistics Group argues in the following article that declining rates of capital formation and technological progress are the fundamental causes of the slowdown. Both of these trends are associated with economic maturation, but the author finds that the slower rate of capital accumulation since 1980 can be traced in part to restrictive fiscal policies. Mr. Kasman concludes that real growth in excess of 4 percent a year is feasible in the near term, but he adds that domestic demand will have to expand at a much faster rate if Japan's trade surplus is to be reduced.

Introduction

From 1980 through early this year, Japan's economy expanded at an average annual rate of 3.75 percent. Although this pace exceeds that of any other industrial nation, Japan's performance has been generally viewed as disappointing. Economic growth has been substantially below the 5 percent annual rate it achieved during the second half of the 1970s, and only about 40 percent of the growth rate in the decade before the first oil shock. Moreover, domestic demand expansion has fallen significantly short of overall economic growth -- a gap reflected in Japan's large and growing external surpluses with the rest of the world.

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*Reprinted from Federal Reserve Bank of New York, Quarterly Review, Summer 1987, pp. 45-55.

The reasons for the growth slowdown and its implications are currently the subject of widespread controversy. It is generally acknowledged that a substantial slowing from the exceptionally rapid rate of expansion during the 1950s and 1960s was inevitable; as the economy matured, the impetus from "catching-up" to other industrial countries would eventually diminish. What is not clear, however, is the extent to which this process can account for the recent slowing in Japanese growth. According to one view, the deceleration of rates of expansion during the 1980s reflects a decline in Japan's capacity for growth that can be principally attributed to continued economic maturation. Many observers, however, take issue with this view and argue instead that policies restricting domestic demand have played a significant role in depressing economic activity. They believe that an acceleration of both output and demand growth in the coming years is necessary if Japan is to utilize its labor and capital resources fully and reduce its external imbalance.

This article examines the slowdown in Japan's growth, assessing the economy's performance over the last decade and the implications that it holds for the future. After a description of the changing trends in output and domestic demand since the 1960s, the analysis focuses on the estimation of the economy's potential or capacity rate of growth and the factors underlying it. Such estimates provide a useful standard for evaluating the actual performance of output as well as domestic demand, because in the long run both must grow at the same rate as potential.

The results indicate that Japan's current potential growth rate is in the range of 4 to 4.5 percent annually, significantly lower than it was in the 1970s, but considerably above the actual average performance since 1980. Both the normal maturation of the economy and restrictive demand policies appear to have played a significant role in the growth experience of Japan since the mid-1970s. The slowdown in potential growth substantially reflects a decline in rates of capital formation and technological progress as the economy has matured. Nonetheless, since 1980, a policy of sustained fiscal austerity contributing to sluggish domestic demand growth has placed a substantial drag on economic activity.

The Japanese Growth Experience: An Overview

The pattern of Japan's growth changed dramatically in the mid-1970s (Chart 1). From the mid-1950s to the early 1970s real gross domestic product (GDP)[1] grew at a remarkable rate of over 10 percent annually, at least twice

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[1] Real gross domestic product measures all goods and services produced in Japan. GDP was considered a more appropriate standard of growth than the alternative real gross national product, a measure of all goods and services produced by Japanese residents, including income derived from production based abroad.

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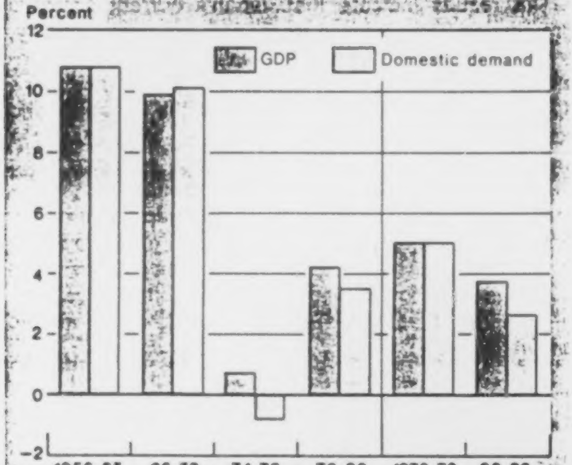
that of other major industrial economies. Following the first oil price shock, however, the trend rate of output growth fell sharply, to an annual rate of 4.2 percent over 1976-86. Furthermore, recorded growth has continued to decelerate over this decade, from roughly 5 percent during the latter half of the 1970s to 3.7 percent over 1980-86; over the past two years (1985-1 to 1987-1), the economy's rate of expansion has declined to 3.3 percent per year.

Chart 1

Real Domestic Demand and GDP Growth

Annual rates of change, 1980 prices



Sources: OECD, Economic Outlook; and IMF, International Financial Statistics.

Substantial as the deceleration of output growth rates has been, domestic demand growth has slowed even further. Throughout the 1950s and 1960s domestic demand grew on average at the same pace as output. However, beginning in the early 1970s, demand growth began to fall short of output, a pattern that has become increasingly pronounced since the late 1970s. Indeed since 1979, Japan's domestic demand has, on average, lagged a full percentage point behind the pace of output growth. As a result of these developments, Japan's external payment (current account) surplus has widened dramatically to over 4 percent of GDP in 1986.

This striking decline in underlying trends of output and demand, confirmed by formal statistical analysis,[2] has generated a wide range of views

[2] To identify structural change in growth patterns, the logarithm of gross domestic product and total domestic demand were regressed on a time trend from 1966-I to 1985-IV. Standard statistical tests were employed to test for structural homogeneity between subperiods of the sample. Statistically significant shifts in the slope of trend lines for output and demand can be detected during the mid-1970s; no further significant shifts are identified following 1975. Application of a likelihood ratio test developed by Quandt (R.E. Quandt, "Tests of the Hypotheses That a Linear Regression Obeys Two Separate Regimes," Journal of the American Statistical Association, Vol. 55 (1980), pp. 334-339) identified 1974 as the year structural change took place in both demand and output.

about its causes and implications. One explanation, suggested by the timing of the shift in growth rates, attributes the slowdown to the two major oil price increases of 1974 and 1979. Indeed, these oil price shocks were substantially responsible for the subsequent cyclical downturns in real growth in Japan as well as other major industrial countries.[3] Japan experienced its first recession of the postwar era in 1974 in the aftermath of the sharp rise in oil prices. A similar but more modest slowdown in growth took place following the second energy price shock.[4]

Nonetheless, there are reasons to doubt that, aside from their temporary cyclical impacts, the oil price shocks could be responsible for the large persistent decline in Japan's trend rate of growth over the past decade. Germany and several other European countries are also heavily dependent on oil imports, yet their growth over the last decade has not slowed nearly as rapidly as that of Japan. The deceleration of trend rates of output and demand growth since 1973 has ranged between 1 and 3 percent for OECD nations; Japan's trend rate of output growth has declined by close to 6 percent. Furthermore, while most industrial economies rebounded to their prior rates of growth during the cyclical recovery in the second half of the 1970s, Japanese growth peaked at a level less than two-thirds of its average over the decade prior to 1974.

It appears, then, that other factors, more specific to Japan, have played the key role in the decline it its underlying growth trend. Almost certainly, an important contributor has been the maturation of Japan from its relatively underdeveloped state immediately after the Second World War to the world's second largest industrial nation. As with many developing economies, Japan's rapid expansion during the initial stage of its industrialization was in large part a reflection of the substantial gaps between its own capital stock and technology and those of the more mature industrial economies. In the process of "catching up," Japan's performance was enhanced considerably by factors that include the integration of superior technologies from abroad into production, the rapid growth of the capital stock from an initially low base, and efficiency gains from reallocation of the labor force from low productivity sectors (agriculture and nonfarm self-employment) to high productivity manufacturing industries.

[3] In Economics of Worldwide Stagflation (Harvard University Press, Cambridge, Mass., 1985), M. Bruno and J.D. Sachs provide an excellent synthesis of much of the literature regarding energy price shocks and their effect on macroeconomic performance in the industrial world.

[4] Japan's growth slowdown following the second oil shock was relatively mild in comparison with that of other industrial economies. This is often attributed to the flexibility exhibited in Japanese labor markets during this period. See Bruno and Sachs, Worldwide Stagflation, for an interesting contrast between the labor market adjustment (and policy response) in Japan and the United Kingdom following the second oil shock and the performance of the two economies. In "Japan's Macroeconomic Performance since the First Oil Crisis: Review and Appraisal," Carnegie-Rochester Conference Series on Public Policy, Vol. 20 (1984), R. Komiya and K. Yasui provide an in-depth analysis of the economy's performance during the two oil shocks.

However, contributions from such sources tend to diminish and eventually are exhausted as an economy matures, leading to a decline in its growth capacity. Indeed, Edward Denison and William Chung, in a study of Japanese growth from 1951 to 1971, estimate that over two-thirds of national income growth was due to transitory factors associated with Japan's rapid industrialization.[5] In their analysis they predicted a steady deceleration in Japan's trend growth rates during the 1970s and beyond as the maturation process continued. The experience of West Germany also provides a historical parallel to the slowing of Japanese growth. West Germany began to rebuild its economy after the Second World War (although its initial position was higher than that of Japan) and sustained an annual growth rate exceeding 7 percent during the 1950s and early 1960s, and growth rates subsequently fell, to an average of 4 percent annually during 1966-73 and less than 3 percent over the past decade.

These considerations strongly suggest that factors related to maturation are responsible for much of the slowdown in Japan's growth during the past decade. The maintenance, until recently, of low unemployment rates and apparently high levels of factor utilization rates despite a significant slowing in growth is consistent with this view of Japan's performance.

The divergence of domestic demand from output growth during the past decade cannot easily, however, be accounted for by the forces of maturation. Indeed, many observers contend that the weak performance of demand has played a significant independent role in deceleration in output growth. According to this view, the slowdown in demand has decreased output growth below its potential and has led to the accumulation of excess capacity not reflected in published indicators of the cyclical position of the economy.

The historical record suggests that restrictive macroeconomic policies have contributed to the deceleration in domestic demand growth during the past decade. A monetary contraction aimed at reducing rising rates of inflation during the early 1970s was a key factor in the slowdown in domestic demand, at least through 1977. This was offset somewhat by an expansion in fiscal policy during the period 1976-79. Since 1979, however, fiscal policy has turned sharply towards a contractionary stance while monetary policy can be seen as broadly neutral. The general government deficit as a share of GDP has fallen from a peak of 5.5 percent in 1978 to less than 1 percent in 1986, as public sector demand has slowed sharply. At the same time, monetary authorities have continued to moderate expansion in their favored monetary aggregate (M2 + CDs). This measure of broad money has grown by 8.3 percent per year since 1981, compared to 11.7 percent during 1976-80.

To argue that demand factors have been significant does not, of course, imply that maturation forces have been of little consequence; indeed both seem to have influenced Japan's performance. It is important, however, to quantify their relative contributions to the slowdown in order to assess the economy's recent performance. This task requires a standard against which actual growth performance can be assessed, in particular, a measure of an economy's potential growth in capacity. In the next section, we provide estimates of Japan's potential growth over the past two decades. These estimates are arrived at by

[5] E.F. Denison and W.K. Chung, How Japan's Economy Grew So Fast (Brookings Institution, Washington, D.C., 1976).

measuring the sources of Japanese growth and analyzing their evolution over time. Once the factors that have contributed to growth are quantified, longer-term processes determining underlying rates of output and demand growth become apparent. In addition, the understanding of Japan's historical experience that emerges from this analysis provides insights into the nation's prospects for growth in the coming years.

Estimating Potential Growth

An economy's potential rate of output growth measures its maximum sustainable rate of expansion. This rate is determined by the growth in productive resources (capital and labor), together with the rate of advance in their productivity. Over time, output growth that is persistently below potential will lead to the buildup of excess capacity, whereas growth persistently in excess of potential will tend to raise factor utilization rates above their normal levels and fuel inflationary pressures. Thus, maintaining the economy on its potential growth path is generally viewed as a desirable macroeconomic policy goal. In addition, potential rates of growth provide a standard for assessing the growth of domestic demand: an economy can maintain a stable external balance (relative to GDP) only if domestic demand grows at the same rate as output.

Actual growth rates in an economy vary around potential as a result of any number of factors that temporarily affect demand or supply. During a cyclical downturn, for example, output normally declines as unemployment rates rise and a portion of the capital stock is rendered idle. Generally, the resultant slowdown in income growth leads to a corresponding decrease in demand. During recovery, output and demand growth will likely exceed potential as underutilized resources are brought back into the production process. Therefore, when viewed over a long enough horizon, an economy's average rate of growth can be expected to reflect its potential.

This insight provides the basis for a standard approach to measure potential. Once actual growth rates are smoothed over several business cycles, the average between successive peaks can be employed as an estimate of capacity growth rates.[6] However, as our discussion thus far suggests, an approach of this type may be misleading when applied to Japan's experience over the past decade. To the extent that persistently weak demand depressed the economy's rate of expansion, averaging rates of actual output growth, even after adjusting for fluctuations around trend, may significantly underestimate the true potential for growth.

A more fundamental approach, employed here, considers the sources of Japanese growth and their change over time. This approach is particularly relevant for the case of Japan because the sources of potential growth have likely undergone a considerable change as maturation has proceeded. In particular, the economy's labor input (total man-hours worked) has risen substantially more rapidly over the past decade than during the prior 1967-73 interval

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[6] For a detailed discussion of this as well as alternative approaches, see L. Christiano, "A Survey of Measures of Capacity Utilization," IMF Staff Papers, No. 1, 1981, pp. 144-198.

(Table 1).[7] In contrast, labor productivity growth has undergone a remarkable decline since the mid-1970s. Clearly, the causes of this decline need to be identified if Japan's potential growth is to be determined.[8]

Table 1: Output and Productivity Growth

(Annual Rates of Change)

	1967-73	1976-86	1976-79	1980-86
Real gross domestic product (constant 1980 prices)	9.2	4.2	5.0	3.7
Labor productivity (GDP/man-hour)	8.7	3.0	3.2	2.9
Total man-hours worked	0.5	1.2	1.8	0.8

In the approach taken here, we consider the relationship linking an economy's rate of output growth to its capacity to accumulate labor and two important components of labor productivity growth: the rate of capital accumulation and the rate of growth of general technological progress.[9]

$$\begin{aligned}\text{Output growth} = {} & (\text{capital stock growth})S_K \\ & + (\text{labor input growth})S_L \\ & + \text{rate of technological progress.}\end{aligned}$$

S_K and S_L measure the elasticity of output with respect to capital and labor respectively. Since production is reasonably approximated by a constant returns to scale technology, these elasticities can be interpreted as the respective output shares of the factors. Technological progress measures the average productivity increase of the labor and capital inputs in this framework and incorporates all components of growth not due to the measured accumulation of these factors.

[7] Part of the sharp increase in labor force growth during the second half of the 1970s reflects a cyclical recovery following the recession of 1974-75. However, even if we incorporate these effects, we find a significant shift in trend rates of growth of total man-hours worked. The causes of this shift are discussed in the appendix.

[8] Another approach, based on estimating Okun's law relationships for Japan, was investigated, but it proved to be unreliable because of the unstable relationship between labor input growth and productivity since 1974.

[9] This approach is similar in methodology to that taken by J.R. Artus in "Measures of Potential Output in Manufacturing For Eight Industrial Countries 1955-1978," IMF Staff Papers, Vol. 24 (1977), pp. 1-35, and similar in spirit to the growth-accounting approach pioneered by Denison. See E. Denison, Accounting for Slower Growth: The United States in the 1970s (Brookings Institution, Washington, D.C., 1979).

As we explain in detail in the accompanying appendix, measuring potential output growth involves two steps. In the first, a relationship between the actual level of output and existing factor inputs, adjusted for rates of utilization, is estimated. This allows us to determine the underlying rate of technological progress and the elasticities necessary to account for each factor's contribution to potential growth. For example, if the elasticity of output with respect to capital is estimated at one-half (as our analysis suggests), then every one percentage point growth in the capital stock contributes 0.5 percent to output growth. In the second step of this procedure, these parameters, together with estimates of the underlying trend rate of capital accumulation and the increase in the labor input, are used to estimate Japan's potential growth and its primary sources.[10]

The results, summarized in Table 2, suggest that there has been an ongoing and substantial deceleration in Japan's potential growth rate during the past two decades, from about 9 percent per year during 1967-73 to roughly 4.5 percent over 1976-86. Moreover, Japan's potential growth has continued to decline over the last decade, falling from estimates of 5 percent during 1976-80 to 4 to 4.5 percent in recent years. Although these estimates reflect the particular assumptions underlying the analysis and should not be viewed as precise measures of potential, the general pattern of decline was consistently displayed under a wide variety of conditions and appears to present a reliable indication of the evolution of Japan's capacity for growth.[11]

The Sources of the Potential Growth Slowdown

The deceleration in Japan's potential growth over the past two decades can be attributed to two major sources. The most important has been a substantial slowing in the rate of capital accumulation from a growth rate of 13 percent during 1967-73 to roughly 6 percent during 1976-86. As a result, capital's contribution to potential declined by more than 3 percentage points, accounting for over two-thirds of the deceleration in potential growth. In addition, the rate of technological progress has declined. Advances in average factor productivity contributed about 2.5 percent to potential growth per year from 1967-1973, but have since fallen to just under 1 percent. Together these factors account for the entire deceleration in potential growth rates, more than offsetting a modest positive contribution to potential from the acceleration in the growth of total man-hours.

[10] No attempt is made to account for Japan's potential growth rate during 1974-75. Large structural shocks brought on by the first oil shock likely lowered the level of the economy's potential output during this period and may temporarily have altered the potential growth path. Although measurement of this effect is important for determining the current level of potential output, it does not bear significantly on our estimates of potential growth rates over the decade following 1975.

[11] In a recent IMF study that employs a comparable approach (C. Adams, P. Fenton and F. Larsen, "Potential Output in the Major Industrial Economies," Staff Studies for the World Economic Outlook, forthcoming), the authors identify a qualitatively similar pattern of decline in Japan's potential growth rate. Their estimates differ, however, particularly in regard to the contribution of the sources of potential growth. This inconsistency reflects the different assumption on which the two studies are based.

Table 2: Composition of Japanese Potential Growth, 1967-86

(Annual Rates of Change, 1980 Prices)

	Potential Growth Rate	Percent Contribution to Potential Growth: Labor Input	Capital Input	Technological Advance	Potential Labor Productivity Growth Rate
1967-73	9.0	0.1	6.5	2.4	8.8
1967-69	10.8	0.1	6.1	4.6	10.6
1970-73	7.8	0.1	6.8	0.9	7.6
1976-86	4.5	0.5	3.2	0.8	3.4
1976-80	4.9	0.5	3.7	0.7	3.8
1980-86	4.1	0.5	2.8	0.8	3.0
Memo: alternative estimate of potential.*					
1981-86	4.6	0.5	3.3	0.8	3.5

*In determining the potential rate of capital accumulation through this approach, we assume that the historical patterns of investment and savings ratios over 1966-80 are maintained.

Both the slowdown in technical advances and decline in rates of capital formation are largely attributable to maturation. In particular, the gains from labor reallocation and from the closing of the technological gap between Japan and other industrial nations have largely been exhausted. An end to this "catching-up" process appears behind the decline in rates of technological advance. In addition, the working of longer-term factors consistent with an economy's natural development -- rising depreciation rates and diminishing returns to capital -- can explain the major part of the decline in rates of capital formation.

Japan's potential growth fell from close to 11 percent to below 8 percent over 1967-73, a reduction that our estimates suggest is entirely attributable to a slowdown in technological advances. As noted earlier, our measure of technological growth is essentially a residual incorporating all components of potential growth not embodied by measured changes in labor and capital. Consequently, the sources of Japanese growth related to the nation's efforts to catch up, including the more efficient allocation of resources, the incorporation of new technologies, and the improvements in factor quality, are likely to be captured in the large estimate of technological advance during this period. The sharp decline in rates of technological advance over 1967-73 might then be interpreted as a reflection of the rapid closing of the technological gap between Japan and other industrial nations.[12] This view is reinforced by the fact that during the mid-1970s the contribution from this component stabilized to a level comparable to those of other industrial countries.[13]

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[12] Because of the approximate nature of our measures of factor inputs and rates of capacity utilization, estimates of technological progress based on a residual must be viewed with caution, especially for the shorter subperiods of our sample. In particular, the implausibly abrupt slowdown in technological progress estimated from 1968 to 1973 should not be taken literally. Instead, it is probably more appropriate to take these estimates as indicative of trends rather than precise levels.

The more moderate slowing of potential growth that has continued since the mid-1970s is essentially a reflection of an ongoing deceleration in rates of capital accumulation. The decline in capital's contribution to potential growth that has offset a more modest increase in labor force growth is also largely explained by the maturation of the economy. However, restrictive fiscal policies appear to have contributed significantly to the slowdown during the 1980s.

To understand the factors underlying these trends, note that the rate of capital accumulation is effectively determined by four components: the savings rate of an economy as measured by the rate of national savings to GDP; the portion of national savings flowing to domestic investment (rather than abroad); the portion of gross investment available for new capital formation as opposed to replacement; and the ratio of output to the capital stock itself.

$$\begin{array}{l}\text{Percent Growth of the Capital Stock} = \dfrac{\text{Net Investment}}{\text{Gross Investment}} \times \dfrac{\text{Gross Investment}}{\text{National Savings}} \\ \qquad \times \dfrac{\text{National Savings}}{\text{Output}} \times \dfrac{\text{Output}}{\text{Capital Stock}}\end{array}$$

Trends in the determinants of capital accumulation are presented in Table 3. As the table suggests, both the net to gross investment ratio and the output-capital ratio (the first and fourth items in the identity and Table 3) have exhibited a pattern of persistent decline, accounting for nearly all of the decline in rates of capital accumulation from the late 1960s through 1980. In contrast, national savings rates and the economy's utilization of its domestic savings remained fairly stable until the 1980s and hence were not significant factors in capital's declining contribution to potential growth in the 1970s.

Underlying this slowdown are two forces that naturally tend to lower rates of capital accumulation as an economy matures. First, as an economy industrializes, its capital stock is likely to grow relative to other factors of production. Eventually this process will lead to diminishing returns in output for a given addition to capital stock, and consequently the ratio of output to capital will fall. However, a declining output-capital ratio requires that an increasing share of output be allocated to investment in order to maintain constant rates of capital accumulation. Thus, if an economy maintains stable investment and savings shares, rates of capital formation (and consequently rates of output, savings and investment growth) will eventually exhibit a pattern of decline.

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[13] The IMF study cited earlier (Adams, Fenton and Larsen, "Potential Output") arrives at the same conclusions. Their estimate of Japan's current rate of technological growth (1.6 percent per year) is well within their current range of estimates (0.75 to 2.25 percent) for the major industrial economies.

Table 3: Determinants of Japan's Rate of Capital Accumulation*

(In Percentage Points)

	1968-73	1976-80	1981-86
Annual growth of capital stock	13.2	6.8	5.3
Net investment as a share of gross investment	53.3	45.5	38.1
Gross investment as a share of national savings	83.4	80.8	74.9
National savings as a share of gross domestic product	31.4	30.1	33.2
Gross domestic product as a share of the capital stock	95.0	61.6	55.5

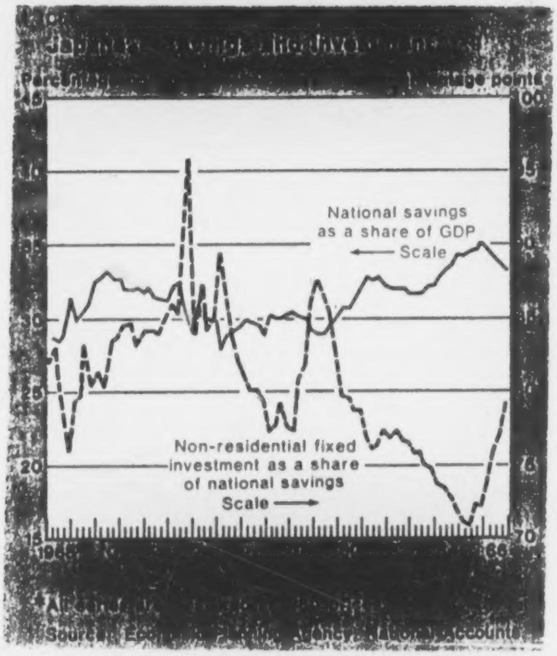
*Estimates of capital stock growth and net and gross investment flows are based on our estimates of the potential rate of capital accumulation as described in the appendix. The total growth of capital stock is equal to the product of the underlying components (expressed in fractions).

The second factor that has contributed to the slowdown in rates of capital formation is the general tendency for a greater share of investment to be devoted to replacing depreciating capital over time. Depreciation expenditures can be expected to rise as an economy's capital stock grows; they generally absorb a larger share of gross investment expenditures in more mature economies. Based on measures of consumption of fixed capital from published national income accounts, depreciation as a share of gross fixed capital formation currently stands at about one-half in Japan compared to two-thirds for the United States. The estimates used to measure potential growth indicate that depreciation expenditures as a share of gross investment have nearly doubled over the past two decades and are a major factor in the decline of the net to gross investment ratio.

Investment Demand and Capital Accumulation in the 1980s

While these longer-term forces have continued to play a role in the slowing of potential growth during the 1980s, the deceleration in the rate of capital accumulation has been augmented by a sharp decline in the rate at which Japan utilizes its domestic savings. The rate at which the economy utilized savings fell steadily from 1979 to 1985, more than 15 percent from peak to trough (Chart 2).[14] This decline is reflected in the increasing share of Japan's savings exported, via widening current account surpluses, over the period.

[14] The ratios in Chart 2 are presented in real terms (all variables are in 1980 prices), reflecting our concern with their relation to real rates of capital formation. The nominal counterparts of these ratios are of somewhat different magnitude but exhibit a similar decline in the utilization rate of domestic savings during the 1980s.



Conceivably, the increasing tendency to invest savings abroad could also indicate maturation, in particular an underlying decline in the profitability of domestic investment opportunities. However, the observed pattern of the components of investment demand during this period suggests that maturation cannot provide the major explanation for this phenomena. Trends in private investment demand growth offer no evidence of a generalized fall in returns to capital; private investment demand growth has accelerated in recent years although interest rates have risen and other components of domestic demand have slowed. In contrast, there has been a sharp contraction in public sector capital outlays that has resulted in a slowing of aggregate investment demand growth. Taken together, these trends suggest that at least part of the deceleration in rates of capital accumulation during the 1980s can be traced to restrictive demand policies.

Evidence for this interpretation is presented in Table 4. Total nonresidential fixed investment (our input to potential capital accumulation) has grown more slowly during the 1980s, both in relation to the experience of the second half of the 1970s and the decade prior to 1974. However, after expanding at a rate roughly similar to that of private sector investment from 1968 to 1980, public sector investment contracted by 0.8 percent per year over 1981-86. Private investment demand, in contrast, grew by 6.7 percent during this time, a faster pace of growth than that recorded from 1976 to 1980. Thus, a major component of this decade's lower rates of utilization appears to be tied to fiscal policy actions that increased the national savings rates, in part by directly depressing rates of capital formation.

Table 4: Output and Productivity Growth

(Annual Rates of Change)

	1968-73	1976-86	1976-80	1981-86
Total non-residential fixed investment	13.3	4.6	5.0	4.2
Public sector	13.5	1.8	5.0	-0.8
Private sector	13.2	5.9	5.0	6.7
Export-oriented*	5.7	15.5	18.7	12.3
Other*	14.2	4.1	3.6	5.6

*Fiscal year figures. Export-oriented industries include general and electrical machinery, transportation equipment and precision instruments. Most recent period encompasses 1981-85.

Sources: OECD, Economic Outlook; Japan Economic Research Center, Five Year Economic Forecast, various years; and Federal Reserve Bank of New York estimates.

In addition, a shift in the composition of private investment demand can be observed. Private investment expenditures have been increasingly directed toward export-oriented sectors where investment demand has grown more than twice as rapidly as in other sectors. To some extent this shift reflects a structural change in the Japanese economy in the direction of low-energy-intensive production following the first oil price shock. However, the continued divergence of investment growth between domestic and export-oriented industries is at least consistent with the view that the slowing in public sector demand may have depressed aggregate investment demand in recent years. It also raises the issue of how the significant changes in the foreign environment facing the Japanese economy during the 1980s have impacted on domestic investment behavior.[15]

Because the evidence suggests that trends in investment demand may not have reflected accurately Japan's potential for capital accumulation in recent years, we consider an alternate measure. In this approach, the historical utilization rate of domestic savings is employed as a long-term constraint on the economy's ability to accumulate capital. While the use of this measure has virtually no impact on our estimates of potential growth before 1980, the results, presented in Table 2, suggest that Japan might have been able to grow at a rate of slightly more than 4.5 percent over 1981-86 if it had continued to utilize its savings according to historical trends.

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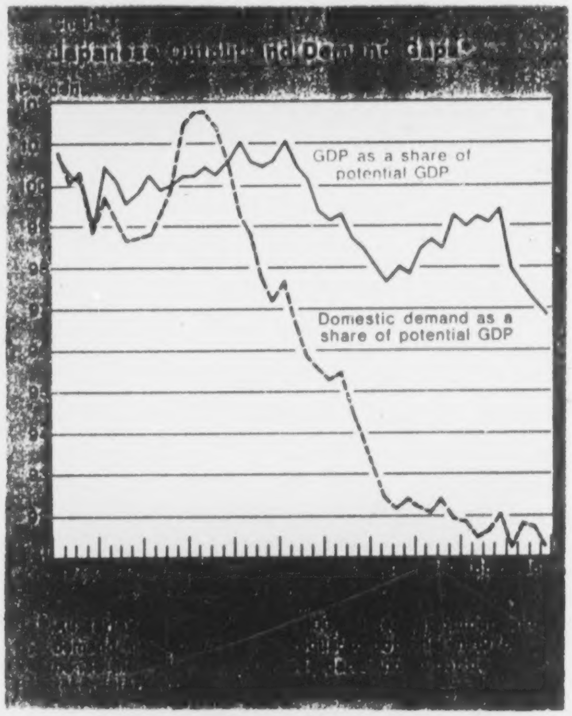
[15] The increase in foreign demand for Japanese goods brought on by the depreciation of the yen relative to the dollar during the 1980s has likely, through the accelerator effect, stimulated domestic investment demand, particularly in export-oriented sectors. On the other hand, the higher interest rates abroad that accompanied the shifting composition of demand may have slowed domestic investment demand by stimulating the export of domestic savings and pushing up the domestic cost of capital.

Japan's Recent Economic Performance

Our estimates of the economy's potential clearly imply that the deterioration in Japan's output growth performance since the mid-1970s is primarily the result of a slowing in potential growth rates. Indeed, output and demand grew somewhat faster than their long-term paths during the second half of the 1970s. However, recent years have witnessed a slowing in output and particularly demand in relation to potential. As a result, significant imbalances currently exist in the economy, implying a very different pattern of growth in the coming years.

The economy's performance is illustrated in Chart 3, where domestic demand and output growth are related to the economy's estimated potential growth path over the past decade. From 1976 to 1979, average growth of both demand and output exceeded potential This result is not surprising, however, because at least initially, Japan was recovering from its most severe downturn of the postwar period. Because of the sharp cyclical swings experienced during the early 1970s, a period in which over-expansion in 1972-73 was followed by recession in 1974-75, the economy's actual performance during the 1970s masks the steady slowing of potential growth rates throughout the decade as well as the return by 1977 of the economy to its long-term growth path.



During the 1980s Japan's potential rate of growth continued to decline, although at a slower rate than over the prior period. However, the economy's actual growth slowed even more substantially. Output lagged behind our lower bound estimates of potential by about three percentage points during the decade as a whole. Domestic demand grew even more slowly, falling nearly nine percentage points relative to potential and nearly six percentage points relative to actual output over the same period.

It is reasonably clear from these trends that the marked slowdown in demand growth relative to its long-term path was a substantial and persistent drag on activity throughout the 1980s. As indicated earlier, the shift to a policy of fiscal austerity undertaken in 1979 was a major factor behind the weakening demand performance. Spurred by a contraction in public sector investment, total public sector demand has grown at an annual rate of less than 1 percent since 1979, compared to 6.1 percent over 1976-79. In contrast, private demand growth has been considerably more robust; indeed household savings rates have actually declined, and since 1980, private investment demand has expanded more rapidly than its average of expansion during 1976-79.[16]

The slowing of domestic demand growth would have led to a much more substantial shortfall of actual relative to potential output had it not been for the substantial rise in external demand for Japanese output during the 1980s. The effects of increased external demand for Japanese goods, offsetting the sluggish performance of the economy's domestic demand, enabled the economy to grow at rates close to its potential for much of the decade and kept excess capacity at fairly modest levels -- at least until the last year. The impact of rising external demand was particularly important from 1983 to 1985, when output grew faster than potential at the same time that the gap between domestic demand and potential output continued to widen. Japan's external sector contributed 1.5 percent to output growth per year from 1980 to 1985, more than three times its average contribution over the previous two decades.

Our analysis of the economy's recent performance has several implications for the pattern of Japan's growth in the future. First, the estimates presented here suggest that Japan's capacity for growth in the coming years is roughly equal to its average rate of expansion during 1976-86. While the slowdown in potential that has taken place over the past decade makes it unlikely that the economy can return to the growth performance it achieved during the late 1970s, there is scope for an acceleration in output growth beyond that recorded recently. Our estimates indicate that growth in excess of 4 percent per year, roughly 0.5 percent faster than Japan's average performance since 1980, can be sustained without risking an acceleration of inflation.

A more radical expansion in the rate of domestic demand growth will be required, however, if the economy is to expand at full capacity. The recent pattern of considerably slower growth in demand than output clearly cannot be sustained because it would require that exports consume an ever increasing share of Japanese output. Therefore, at some point, Japan's external position must stabilize. Even if Japan's external surpluses remain at the current levels relative to GDP, an acceleration in demand growth to rates consistent with current rates of potential will be necessary to prevent the accumulation of excess capacity. By itself, this finding implies that demand must grow by roughly 1.5 percent above its average performance since 1980. Most observers would agree, however, that some reduction in Japan's net exports to output ratio must occur in the coming years. Such a reduction would require a negative contribution from the external sector during the adjustment period. Under these conditions, a rate of domestic demand growth that is in excess of the economy's potential and considerably faster than demand's performance over the past decade will be necessary to maintain output on its long-term path while facilitating external adjustment.

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[16] Private consumption demand has slowed during the 1980s relative to its rate of expansion during the second half of the 1970s. However, this development is due in large part to the rapid growth in government tax revenues. Household consumption as a share of disposable income has risen steadily in recent years, averaging close to 84 percent from 1981 to 1986 (compared to 80 percent from 1975 to 1980).

Conclusion

There seems to be little doubt that both the normal maturation of the economy and restrictive demand policies have been important factors in the slowdown in Japanese growth since the mid-1970s. As a result of natural declines in rates of capital formation and technological progress associated with Japan's maturation, potential growth rates have steadily fallen during the past two decades. At present, potential growth appears to be in the range of 4-4.5 percent annually, less than half the rate over the period 1967-73. Actual average growth performance over the last six or seven years has fallen short of even the lower bound of the economy's potential.

Perhaps more importantly, domestic demand growth in Japan has been significantly weaker than overall growth, largely reflecting a policy of sustained fiscal austerity. The fiscal drag on economic activity has been offset, to a substantial extent, by a stimulus to demand from the historically unprecedented foreign trade surpluses.

In the coming years, Japan will be faced with the difficult challenge of correcting the accumulated external imbalances of the past while attempting to achieve or maintain growth near potential levels. Our estimates suggest that a moderate increase in the rate of output growth above recent performance can be sustained without the risk of fueling inflationary pressures. However, performance at full capacity alone will not be sufficient to ensure adjustment of external sector imbalances. A more dramatic and prolonged acceleration of domestic demand growth, well in excess of the pace in recent years, will be necessary if Japan is to make substantial progress in reducing its foreign trade surpluses.

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Appendix: Estimating Japanese Potential Growth

This section describes the methods used to estimate Japan's potential growth. Potential growth is considerably harder to measure than to define because of the difficulty of accurately quantifying its basic determinants and identifying their underlying trends.

The analysis is based on a standard "production-function" relation between the level of the economy's output and its capital and labor resources.

Returns to scale and factor shares are taken to be constant, an assumption usually found to be a reasonable approximation at this aggregate level.[1]

$$Q_t = Ae^{r_1 t}(c_t K_t)^{\alpha} L_t^{1-\alpha} \qquad \text{(A.1)}$$

where: Q_t = actual level of output
r_1 = time trend of technological change
K_t = capital stock
L_t = labor input (total man-hours worked)
c_t = utilization rate of the capital stock
α, $1-\alpha$ = factor shares of capital and labor, respectively

A major difficulty in applying this method is that any measure of aggregate factor inputs is, at best, a rough approximation. In order to represent an economy's productive process by a single equation, various inputs and outputs are aggregated into a few composite variables. In addition, the analyst must rely on proxies to account for changes in the degree of intensity of the factors used. In Japan's case, this procedure is made particularly difficult by the inapplicability of the common proxies (unemployment rates and rates of capacity utilization).

Fairly standard techniques were employed to measure factor inputs. The capital stock, defined as all nonresidential structures and machinery, is measured through a simple perpetual inventory method that considers gross fixed nonresidential investment as the economy's addition to its capital stock.[2] Obviously the capital stock is not always utilized at its normal rate, and some adjustment to measure the actual input of capital in each period is required. After experimenting with different techniques to estimate the utilization rate of capital, we chose a weighted average of growth during the past four quarters relative to average growth rates during the past two and a half years.[3] We assume that normal utilization rates are achieved when this ratio equals one. The economy's labor input is estimated by total man-hours worked in all industries, and our estimates of technological change are captured by time trends that incorporate all systematic components of growth not measured by capital stock and labor input growth.

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[1] A production technology that assumes constant factor shares for capital and labor is known as "Cobb-Douglas." It also implies constant elasticities of output with respect to each productive factor. The Cobb-Douglas function is often employed when estimating potential growth because it allows for a clear-cut identification of the individual sources of potential growth.

[2] The capital stock, measured in 1980 prices, is increased by gross fixed nonresidential investment (INV) minus an assumed 8 percent annual rate of depreciation. The formula for the change in the capital stock, on a quarterly basis, is $K_t - K_{t-1} = I_t - .02K_{t-1}$, where: $I_t = .3INV_{t-1} + .5INV_{t-1} + .2INV_{t-3}$. Denison and Chung's estimate of net capital in 1955 was used as a benchmark.

Quarterly data from 1966-I to 1985-IV were used in the estimation process. A primary consideration in the estimation was the identification of structural shifts in factor shares and trend rates of technological change. Tests for structural stability of the relationships suggest a single break within the sample period at the end of 1973. The best-fitting equation estimates for equation A.1 are presented in Table A.

Table A: Regression Estimates of Japan's Production Function*

	1966-I to 1973-IV	1974-I to 1985-IV
Ln A	-.832	-.871
	(-6.6)	(-5.4)
α	.503	.539
	(4.8)	(7.04)
r_1	.016	.002
	(3.4)	(2.30)
r_2**	-.0003	--
	(4.2)	
Summary statistics		
R^2	.974	.920
SEE	.009	.005
Rho	.699	.846
DW	2.19	1.94

*All equations are estimated with Cochrane-Orcult correction for first order serial correlation. The estimated form was obtained by dividing equation (A.1) by the labor input and taking logs: $n\ (/L) = n\ A_t + \ n(cK/L) + r_t$. T-statistics are in parentheses.

**r_2 is a second order time-trend variable that captures the decelerating rate of disembodied growth during the first half of the sample period.

These estimates fit the data well, as the satisfactory goodness-of-fit statistics attest. In addition, the parameter estimates proved to be stable with respect to small changes either in our choice of sample period or in the assumptions required to measure the capital stock and its rate of utilization. The results suggest that no significant change has taken place in the production technology of Japan over time. Estimates of capital's share of output increased from 50 to 54 percent over the two subperiods of the sample. However, the underlying rate of technological progress exhibits a substantial slowdown, evidenced by the significance of a negative second-order time-trend variable from 1966 to 1973 that reflects a steady downward trend in the rate of technological progress during this period.

[3] Other estimates of capacity utilization rates, including indexes of operating ratios compiled by the Japanese Ministry of International Trade and Industry (MITI), were employed but did not perform as well as the chosen measure in estimation.

These estimates of factor shares and underlying rates of technological change provide a means to account for the sources of potential growth. For example, our estimate of a factor share of capital in the vicinity of 0.5 indicates that every 1 percent rate of growth in the economy's underlying rate of capital will contribute 0.5 percent to potential growth rates. A similar calculation can be made for labor; these estimates provide the basis for the contribution of factors presented in Table 2.

Obviously an estimate of Japan's potential rate of capital and labor inputs is required to complete the analysis. The potential level of the labor input was determined by regressing the log of total man-hours worked on a time trend. As in the case of production technology, a break in trend is identified at the end of 1973. The annualized trend rates of growth for total man-hours worked were 0.2 percent over 1966-73 and 1.1 percent from 1974 to 1986.

Two factors might account for this sharp increase in total man-hours worked: a rise in female participation rates and a reversal of the trend towards lower average hours worked in the economy. The rise in female participation rates can be explained by a combination of economic and cultural factors at work throughout the industrial world, reflecting longer-term shifts in labor inputs. In contrast, the increase in average hours worked in Japan is less easily explained and appears unique among major industrial nations. While this shift raises questions about the relationship between recent trends and Japan's underlying labor force growth, we refrained from an in-depth study of the labor input because it has not played a significant role in the slowing of output growth rates during the past two decades.[4]

Two techniques were used to estimate the potential rate of capital accumulation. First, time trends for total nonresidential fixed investment demand were estimated in a fashion similar to that used to estimate total man-hours worked. Our findings enabled us to estimate the potential rates of capital accumulation presented in Table 3. We also employed an alternative measure because it was not clear that the fitted trends in investment demand accurately captured the economy's potential to accumulate capital. Consequently, trends in nonresidential fixed investment demand were reestimated using the historical rate at which savings flows were utilized in that sector. This alternative procedure produced no change in the estimated rate of capital accumulation through 1980, but raised the estimate for 1981-86 by one percentage point above that based on simple trend-fitting.

Our estimates of Japan's potential growth rate and its sources from 1967 to 1986 can be found in Table 2. No attempt was made to present estimates of Japan's potential growth rate over 1974-75 for two reasons: estimates for this period were not essential to our analysis, and standard estimation procedures could not easily account for the large structural shock to the economy's level of potential output.

[4] K. Hamada and Y. Kurosaka, "Trends in Unemployment, Wages and Productivity: The Case of Japan," Economica, Vol. 53 (1986), Supplement, provides a more detailed discussion of trends in Japan's labor input.

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Pages: 1-3, 5, 6

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REPORT

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IN THIS ISSUE:

Tokyo Plans Aid To Gulf Situation 1

LDP Elections Enter Final Stretch 3

Japan To Announce ASEAN Aid Package In December 4

Notes: Trade Bill; Verity Nomination;
Japan's Energy Outlook Revised;
U.S.-Japan Fishing Pact;
Bilateral Cocom Talks;
Japanese Reaction To U.S.-Canada Free Trade Agreement 5

Tokyo Plans Aid To Gulf Situation

After much internal debate Tokyo has decided how it will aid Western efforts to end the Iran-Iraq war and ensure naval transit in the Persian Gulf. Prime Minister Yasuhiro Nakasone told President Reagan at a September 21 meeting in New York that Japan would contribute to the cost of maintaining free navigation in the Gulf. In light of constitutional restrictions on military forces and the sensitivity of the issue in general, Mr. Nakasone and the ruling Liberal Democratic Party threaded a delicate course to fulfill the promise.

The problem was finding a way to help within the constraints of existing laws and policies. Legislation creating the Self Defense Forces also prohibits them from operating outside of areas adjacent to Japan. Current policy based on this law also prohibits Japan from participating in armed actions by the United Nations. Rather than attempt to change the laws and reverse a long-held consensus, Mr. Nakasone opted to use existing channels to respond quickly to the situation, proposing the following initiatives:

- Installation of a precision navigation system - To help vessels gauge their positions in the Persian Gulf more accurately, Japan has offered to install a Decca precision navigation system consisting of 20 to 30 stations. Located among the members of the Gulf Cooperation Council (Saudi Arabia, Kuwait, Oman, Bahrain, Qatar and the United Arab Emirates), the British-made system would allow captains to plot courses through waters swept of mines and other hazards with greater confidence. Japan is likely to contribute both money and equipment (for a total of about $10 million) to the project, which the United States has already begun discussing with council members. Officials say that the contribution can be made during the current fiscal year.

- Aid to the United Nations - Tokyo has pledged $10 million to the peace efforts of the United Nations. The money will come from the $20 million already budgeted this year for U.N. peacekeeping support, but it is unclear if any conditions are attached.

- Economic aid for the region - Japan has dangled the carrot of dramatically increased economic aid to Iran, Iraq and other affected nations in hopes of improving the chances for a negotiated settlement. Tokyo has already committed itself to a $200 million untied loan by the Export-Import Bank of Japan to Oman, and $300 million in credits and Ex-Im loans to Jordan. Specific aid proposals for Iran and Iraq have not been spelled out, but Tokyo has promised to help in reconstruction efforts.

- Support for the U.S. military - As an indirect contribution to the cost of U.S. naval escorts for oil tankers, Tokyo may increase its contribution to the maintenance of American military bases in Japan. Although a 6.2 percent increase in overall defense spending in FY 1988 is currently planned, it is unclear if the present support outlays of approximately $1.5 billion a year will be raised. It is hoped that the details can be worked out with the United States in time for inclusion in the FY 1988 budget.

Defense Secretary Caspar Weinberger hailed the plan as "a fine first step toward a meaningful Japanese contribution." Mr. Weinberger obviously would like even more help; he specifically mentioned sending Japanese minesweepers to join those of other Western navies during early October talks with Japan Defense Agency director general Yukio Kurihara (see JEI Report No. 38B, October 9, 1987).

Japanese diplomats in Tehran report that the Iranian government viewed the proposal as "nonhostile." Nevertheless, two Japanese oil tankers were hit by Iranian fire a few days later. Japan remains highly dependent on oil from the Mideast, which supplied 67.3 percent of all its crude oil imports from January through August of this year. In fact, Japan has drastically cut purchases from Iraq while maintaining links with Iranian oil dealers (see Table). In any case, Tokyo's plan is another sign that Japan is willing to support its international policies with actions and to fulfill its responsibilities in the Western alliance.

Jon Choy

Japan's Oil Imports from the Middle East

(in thousands of kiloliters)

	January-August 1986		January-August 1987	
	Quantity	Share	Quantity	Share
Total Oil Imports	129,536	100.0%	119,732	100.0%
Middle East	90,351	69.7	80,573	67.3
Iran	9,117	7.0	9,448	7.9
Iraq	6,706	5.2	3,444	2.9

Source: Ministry of International Trade and Industry and the Petroleum Association of Japan

LDP Elections Enter Final Stretch

At long last the jockeying for position in the Liberal Democratic Party presidential sweepstakes has ended and serious efforts are underway to find a successor to party president and prime minister Yasuhiro Nakasone. The party's three "new leaders" -- LDP secretary general Noboru Takeshita, executive council chairman Shintaro Abe and Finance Minister Kiichi Miyazawa -- have all declared as candidates; a dark horse challenger, Susumu Nikaido, failed to secure the minimum requirements for filing. Most observers feel that within a few days the low-profile Mr. Takeshita will emerge triumphant, riding the crest of a Takeshita-Abe-Komoto alliance forged earlier in the year.

The current schedule calls for a decision to be reached by October 20, with the party membership endorsing a selection determined in intra-party negotiations. If a vote were held today, Mr. Takeshita would emerge victorious, having garnered far more than the simple majority of Diet members required to win. The possibility of an upset exists, but the likelihood is that the numbers will give Mr. Takeshita the top prize.

With little suspense surrounding the presidential election, attention has turned to the choice of cabinet members in the new government and the key question of party leadership posts. Observers anticipate that in return for his support, Toshio Komoto or a prominent member of his faction will have a seat in the new government, which will take office at the beginning of November. Mr. Abe would be situated strategically for secretary general of the LDP, with Shin Kanemaru -- the behind-the-scenes force in the Takeshita candidacy -- taking a largely symbolic yet prestigious position, perhaps deputy prime minister or party vice president. Important questions remain concerning Mr. Miyazawa's fate. While he is a controversial figure, there is no doubt that the current finance minister brings considerable experience to the government. Utilizing that experience in an approrpriate manner is an important consideration for any new government.

The current political situation abounds in ironies. Mr. Takeshita has by far the lowest profile of the three candidates and is hampered by his limited foreign policy experience, yet he has the largest faction in the party and

Moreover, although promoting private ventures is a central element of the plan, no decision has been made on the strategy that will be used to accomplish this goal. The most recent full-scale initiative, the 1977 Fukuda Plan, was designed to pump $1 billion into ASEAN for regional large-scale industrial projects. Ultimately, however, the attempt to enhance regional cooperation foundered when several countries failed to approve the projects in question. This time around the disbursement will probably be handled in a different manner. Questions such as whether the $2 billion will be geared to large or medium- to small-scale projects, whether Tokyo will insist on approving the projects or will allow the recipient countries some discretion, and whether the disbursement will be handled bilaterally or regionally will be decided in the next two months.

Eileen M. Doherty

Notes

Trade Bill - Action on HR 3, the omnibus trade bill, is stalled for the time being. Despite an October 31 target date for completion, the conference committee to iron out differences between the House and Senate versions will not meet again until legislators complete the budget reconciliation bill. The delay has raised questions concerning the feasibility of finishing work on the trade bill this year; some lawmakers have already said that the bill may not be completed until 1988.

Much depends, of course, on the will of the legislators. If the House and Senate leadership make HR 3 a "must finish" item before Congress adjourns, the bill could be completed in a relatively short time. Adjournment is set for November 21, although many observers believe that this is unrealistic. Congressional staff members continue to work behind the scenes to reach tentative agreements. In this way much of the groundwork will be done should legislators decide to put the trade bill on the president's desk before Christmas.

Verity Nomination - On October 13 the Senate confirmed C. William Verity as Secretary of Commerce. The 84-11 decision came after the upper chamber voted to end a filibuster led by Sen. Jesse Helms (R, N.C.), who argued that Mr. Verity's commitment to expanding U.S.-Soviet trade relations could jeopardize this country's security. Some senators also questioned Mr. Verity's attitudes toward human rights in the U.S.S.R. (The new secretary has criticized the Jackson-Vanik amendment to the 1974 Trade Act, which was aimed at increasing Jewish emigration from the Soviet Union.) Mr. Verity has pledged to enforce export control laws as well as to uphold the administration's position on other trade matters.

Japan's Energy Outlook Revised - An advisory body to the Ministry of International Trade and Industry expects Japan's energy demand to increase 25.6 percent by the year 2000 (see Table). The medium-term outlook is in line with Tokyo's drive to reduce dependence on imported crude oil through diversification. Nuclear power plays the leading role in this shift, supplemented by aggressive utilization of non-traditional energy sources such as photovoltaic devices and ocean wave generators.

MITI's views rest at the conservative end of the spectrum. Japan's Atomic Energy Commission is much more optimistic, predicting that nuclear generators will provide approximately 40 percent of all electricity by the year 2000 and 60 percent thirty years after that. Ratification of a new U.S.-Japan treaty on nuclear fuel would be an important step toward this goal (see JEI Report No. 45B, November 22, 1985). The most significant aspect of the new outlook is a 10 percent reduction in total predicted energy demand in 2000 compared with the previous outlook issued in 1983 (see JEI Report No. 28A, July 20, 1984).

Japan's Long-Term Energy Demand Outlook

Source	FY 1986		FY 2000	
(millions of units)	Quantity	Share	Quantity	Share
Coal (metric tons)	103.9	18.3%	136.0	18.7%
Nuclear Power (kilowatts)	25.8	9.5	53.5	15.9
Natural Gas (kiloliters*)	42.8	9.9	58.0	10.8
Hydroelectric Power (kilowatts)	35.8	4.2	45.5	4.4
Geothermal Power (kiloliters*)	0.4	0.1	4.4	0.8
Non-traditional Energy Sources (kiloliters*)	5.5	1.3	24.5	4.5
Crude Oil (kiloliters)	240.0	56.8	242.0	45.0
Total (kiloliters*)	430.0	100.0	540.0	100.0

*Crude oil equivalent

Source: Ministry of International Trade and Industry

U.S.-Japan Fishing Pact - After two rounds of talks, a basic agreement was reached October 2 to extend the bilateral fishing pact despite Japan's plans to proceed with research whaling. The two sides reportedly made no major changes to the substance of the treaty, which allows Japanese fishermen to ply U.S.-controlled waters and promotes bilateral trade in fish products, but its duration has been cut from five years to two at the request of the United States.

Tokyo will push ahead with plans to conduct a random harvest of whales for research purposes, but has reduced the scale of the plan by nearly two-thirds from 875 Minke and sperm whales to around 300 (see JEI Report No. 36B, September 25, 1987). While the concession may placate the administration, U.S. environmental groups have filed a lawsuit to force the government to impose sanctions against Japan.

Bilateral Cocom Talks - Winding up the first in a regular series of discussions on strategic export control issues, Japan and the United States agreed October 7 that all Cocom (Coordinating Committee for Multilateral Export Controls) members must strengthen enforcement of the regulations governing sales of senstive products and technology to communist countries. The new subcabinet-level forum was established at Tokyo's initiative to institutionalize the consultative process set in motion by disclosures that Toshiba Machine